FRENCH & PARRELLO ASSOCIATES

Advancing Our Client's Vision
IMPROVING OUR WORLD

OPERATIONS & MAINTENANCE MANUAL

Lauriston Park
Block 124, Lot31
Borough of Rumson
Monmouth County, NJ

Prepared For:
Yellow Brook Property Co., LLC
247 Bridge Ave., Suite 5
Red Bank, NJ 07701

Brian R. Decina, PE
NJPE License No. 45149

January, 2021
FPA No. 15053.003

Stormwater Management Measures
Maintenance Plan & Field Manuals

Development Name: ___Lauriston Park_____

Address: ____91 Rumson Rd., Rumson, NJ 07760_____

Block(s) / Lot(s): ___Block 124, Lot 31_____

Township, County: ____Borough of Rumson, Monmouth County, NJ_____

Party Responsible for Maintenance:

_____TBD_____

Address: _____

Contact Person(s): _____ Phone: _____

Prepared by: _French & Parrello Associates, P.A.___ Date: _____01/29/2021_____

This plan is recorded in

Deed Book # _____ Page # ____ with _____ County Clerk on Date _____

Last Revised on ____/____/_____

Table of Contents

Part I- Maintenance

Part II- Field Manuals and Maintenance Records

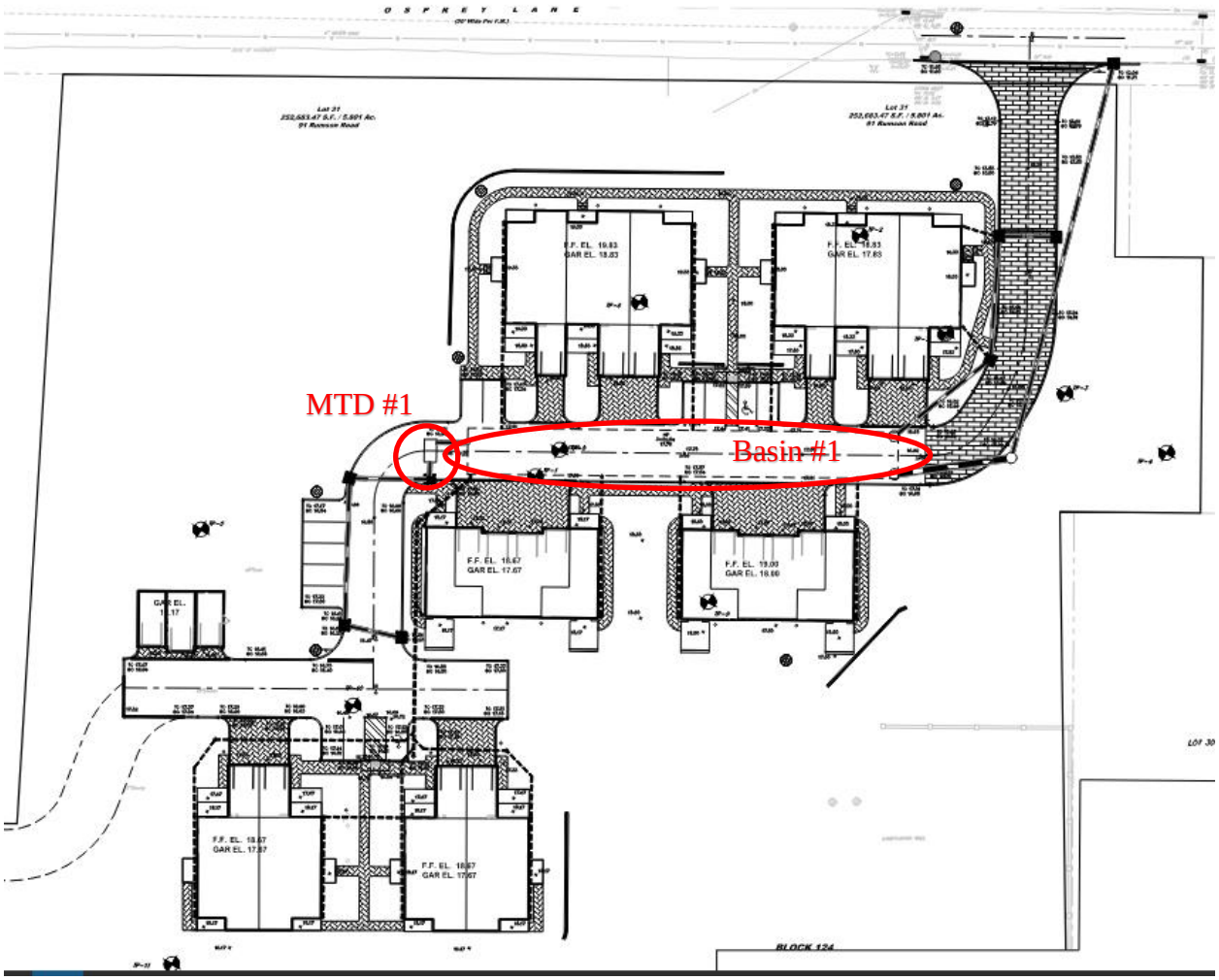
Part I- Maintenance Plan

List of Stormwater Management Measures

The stormwater management measures incorporated into this development are listed below. The corresponding Field Manuals for the stormwater management measures are located in Part II of the Maintenance Plan.

Type of Stormwater Management Measure	BMP No.	Location Description	State Plane Coordinates / Lat., Long.
Underground Detention Basin	Basin #1	Under site driveway, 300' from entrance	40.361171, -73.994373
Manufacture Treatment Device	MTD #1	Adjacent to Basin #1	40.3612263 -73.9946367

Location Map



No.	Type of Stormwater Management Measure
Basin #1	Underground Detention Basin
MTD	Manufactured Treatment Device

Description of Stormwater Management Measures

Name of the stormwater management measure: Basin #1
Design storm: 100-Yr Storm

- Design Purposes:
    - Detention
- Dimensions: __182'__ (Length) x __19.5'__ (Width) x ___30"___ (Depth)

Name of the stormwater management measure: Water Quality Devices (Kraken Filter)
Design storm:

- Design Purposes:
    - Water quality
    - 1.25 inches in 2 hours

Preventative and Corrective Maintenance Action Plan

As per N.J.A.C. 7:8-5.8(b) & (e), preventative and corrective maintenance shall be performed to maintain the function of the stormwater management measure, including, but not limited to, repairs or replacement to the structure; removal of sediment, debris, or trash; restoration of eroded areas; snow and ice removal; fence repair or replacement; restoration of vegetation; and repair or replacement of non-vegetated linings.

As per NJDEP BMP Manual Ch. 8 Feb. 2004), maintenance plans should include specific preventative and corrective maintenance tasks such as removal of sediment, trash, and debris; mowing, pruning, and restoration of vegetation; restoration of eroded areas; elimination of mosquito breeding habitats; control of aquatic vegetation; and repair or replacement of damaged or deteriorated components.

As per NJDEP BMP Manual Ch. 8 (Feb. 2004), maintenance plans should include recommended corrective responses to various emergency conditions that may be encountered at the stormwater management measure. It should be noted that if the stormwater management measure includes a Class I or II dam as defined in the NJDEP Dam Safety Standards at N.J.A.C. 7:20, an emergency action plan for the dam is also required. See N.J.A.C. 7:20-1.7(f) for more information.

As per NJDEP BMP Manual Ch. 8 (Feb. 2004), the maintenance plan should address the maintenance of access points to the stormwater management measures in accordance with the following:

- all components of the stormwater management measures must be readily accessible for inspection and maintenance;
- trees, shrubs, and underbrush must be pruned or trimmed as necessary to maintain access to the stormwater management measure;
- the exact limits of inspection and maintenance easements and rights-of-way should be specified on stormwater management measure plans and included in the maintenance plan.

Preventative Maintenance Actions

Frequency	Preventative Maintenance Actions	Stormwater Measures/ No.
Monthly	Remove any debris or sediment	Basin and Inlets
Quarterly	Sediment removal	Basin
Semiannual	Sediment removal, Inspect Automatic backwash	Basin, Water Quality Device
Annual	Basin Structural Inspection Filter cartridge cleaning/replacement	Basin, Water Quality Device
Unscheduled	Quick inspection after every 1" rain	Basin, Water Quality Device

Corrective Maintenance Actions

Potential Corrective Maintenance Actions	Stormwater Management Measures/No.
- Repair/replacement of outlet pipes or orifices	Basin #1
- Sediment Removal	Basin #1
- Filter cartridge replacement	Water Quality Device

Inspection and Logs of All Preventative and Corrective Maintenance

As per N.J.A.C. 7:8-5.8(f), the person responsible for maintenance shall maintain a detailed log of all preventative and corrective maintenance for the structural stormwater management measures incorporated into the design of the development, including a record of all inspections and copies of all maintenance-related work orders.

As per NJDEP BMP Manual Ch. 8 (Feb, 2004), a maintenance plan shall include a schedule of regular inspections and tasks, and detailed logs of all preventative and corrective maintenance performed on the stormwater management measure, including all maintenance-related work orders. The person with maintenance responsibility must retain and, upon request, make available the maintenance plan and associated logs and other records for review by a public entity with administrative, health, environmental, or safety authority over the site.

Inspection Checklists in the Field Manual for the stormwater management measures on this site include:

- Basin #1
- Manufactured Treatment Device

The logs of all inspections, and both preventative and corrective maintenance performed should be attached in the "**Maintenance Logs and Inspection Records**" section. See Part II of the Maintenance Plan

Maintenance Personnel, Equipment, Tools, and Supplies

As per NJDEP BMP Manual Ch. 8 (Feb. 2004), maintenance plans should include equipment, tools, and supplies necessary to perform the various preventative and corrective maintenance tasks specified in the plan. Sources of specialized, proprietary, and nonstandard equipment, tools, and supplies should also be provided.

This section applies to both maintenance tasks that are performed by in-house personnel or are outsourced.

Maintenance Personnel/Equipment/Tools/Supplies

Personnel/Equipment/Tools Name	Quantity
General Maintenance Crew	1
Shovel, rake, pick, wheel barrow, gloves, sediment probe, flashlight, camera, hard hat, broom, power washer, hose	As needed
Trucks, lightweight backhoe, vacuum truck, sump pump	As needed

Specialized, proprietary or nonstandard equipment, tools and supplies, if applicable

Name of the specialized, proprietary or nonstandard equipment, tools and supplies	Source
Filter cartridge for Kraken Filter	BioClean

Disposal Plan

Disposal/Recycling Procedures

Dewatering procedures and requirements

Sediment removal shall take place when all runoff has drained from basins, pervious pavers and storm sewer system and all are dry.

Unloading procedures and requirements

Disposal of the debris, trash, sediment and all other waste material should be done at an approved disposal/recycling site and in accordance with all applicable local, state and federal regulation

Disposal Field – Offsite

Description of the Offsite Disposal:

Disposal of the debris, trash, sediment and all other waste material should be done at an approved disposal/recycling site and in accordance with all applicable local, state and federal regulations. The facilities operation or contractor shall be responsible for contracting a company to dispose all material off-site

Cost Estimate

As per N.J.A.C.7:8-5.8(b), cost estimates of maintenance tasks, including, but not limited to, sediment, trash and debris removal must be included in the maintenance plan. Below is an illustration of a cost breakdown and estimation for maintenance of stormwater management measures. The actual costs may vary with factors such as local requirements, equipment, personnel, weather, and maintenance methods.

COST ESTIMATES

Cost Overview

The design engineer should list the maintenance tasks and break down the costs for each maintenance task.

Cost Type	Cost	Details
Annual Contract to perform all routine and unscheduled maintenance	$2,000	
Annual contract to perform corrective measures	$5,000	

Safety Measures and Procedures

As per NJDEP BMP Manual Ch. 8 (Feb. 2004), maintenance plans should include procedures and equipment required to protect the safety of inspection and maintenance personnel.

Safety Regulations and Requirements

Attach all local ordinance(s) and state and federal regulations regarding occupational safety after this section

Safety Tools, Equipment and Garments

Safety Tools and Equipment	Location	Responsible Person/Contact #

Emergency Procedures

In case of emergency, Call 911

Training Plan and Records

As per NJDEP BMP Manual Ch. 8 (February 2004), maintenance training begins with a basic description of the purpose and function of the overall stormwater management measure and its major components. Such understanding will enable maintenance personnel to provide more effective component maintenance and more readily detect maintenance-related problems. Depending on the size, character, location, and components of each stormwater management measure, maintenance personnel may also require training in specialized inspection and maintenance tasks and/or the operation and care of specialized maintenance equipment. Training should also be provided in the need for and use of all required safety equipment and procedures.

I. Training Plan

Types of Training

- Mandatory Stormwater Management Basic Training and Field Manual Usage Training for new maintenance crews
- Occupational Safety Training
- Subcontractor training, if applicable

Content of Training

- **Stormwater Management Basic Training**
    - Purposes and Functions of BMPs

      Example Training Material
        - NJDEP Stormwater BMP Manual, Chapter Nine: Structural Stormwater Management Measures

More training information is available at NJ Stormwater.org (http://www.nj.gov/dep/stormwater/training.htm)

- Vegetation Care

  Example Training Material
    - NJDEP Stormwater BMP Manual, Chapter Seven: Landscaping

- Field Manual Usage Training

    - Field Manuals attached to this Maintenance Plan

- Equipment and Tools Operation Training

        - Equipment or tool manufacturer's Operation & Maintenance Manual

    - Occupational Safety Training

        - OSHA Training
        - Equipment or tool manufacturer's Operation & Maintenance Manual

II. Training Records

Training attendance sheets should be attached by the responsible party after each training.

Attach training attendance sheets from each training

Annual Evaluation of the Effectiveness of the Plan

As per N.J.A.C. 7:8-5.8(g), the person responsible for maintenance shall evaluate the effectiveness of the maintenance plan at least once per year and adjust the plan and the deed as needed.

The responsible party should evaluate the effectiveness of the maintenance plan by comparing the maintenance plan with the actual performance of the maintenance. The items to evaluate may include, but not limited to,

- Whether the inspections have been performed as scheduled;
- Whether the preventive maintenance has been performed as scheduled;
- Whether the frequency of preventative maintenance needs to increase or decrease;
- Whether the planned resources were enough to perform the maintenance;
- Whether the repairs were completed on time;
- Whether the actual cost was consistent with the estimated cost;
- Whether the inspection, maintenance, and repair records have been kept.

If actual performance of those items has been deviated from the maintenance plan, the responsible party should find the causes and implement solutions in a revised maintenance plan.

Annual Evaluation Records

Evaluator(s)	Date of Evaluation	Decision
		__Maintain current version OR __Revise current version Revision date _____ (also update the last revision date on the cover page) __Requires a new deed recording (also update the last recording information on the cover page)
		__Maintain current version OR __Revise current version Revision date _____ (also update the last revision date on the cover page) __Requires a new deed recording (also update the last recording information on the cover page)
		__Maintain current version OR __Revise current version Revision date _____ (also update the last revision date on the cover page) __Requires a new deed recording (also update the last recording information on the cover page)

Documents

Please attach the following:

Transfer Agreement

As per N.J.A.C. 7:8-5.8(b), if the maintenance plan identifies a person other than the developer as having the responsibility for maintenance, the plan shall include documentation of such person's agreement to assume this responsibility, or the developer's obligation to dedicate a stormwater management facility to such person under an applicable ordinance or regulation.

Deed

As per N.J.A.C. 7:8-5.8(d), if the person responsible for maintenance is not a public agency, the maintenance plan and any future revisions shall be recorded upon the deed of record for each property on which the maintenance described in the maintenance plan must be undertaken.

As-Built Drawings with Drainage Plans

As per NJDEP BMP Manual Ch. 8 (Feb., 2004), as-built construction plans of the stormwater management measure and copies of pertinent construction documents, such as laboratory test results, permits, and completion certificates should be included in this Maintenance Plan.

Landscaping Plan for the Stormwater Management Measures

As per NJDEP BMP Manual Ch. 8 (Feb., 2004), if there is a Landscaping Plan for the stormwater management measures, it should be included in this Maintenance Plan.

Permeability Test/Infiltration Test Report

As per NJDEP BMP Manual Ch. 8 (Feb., 2004), if a permeability test or infiltration test is required and available, the reports for pre-construction and post-construction testing should be included in this Maintenance Plan.

Groundwater Mounding Analysis

As per NJDEP BMP Manual Ch. 8 (Feb., 2004), if a groundwater mounding analysis is required and the groundwater mounding analysis was performed, a copy of the analysis should be included in this Maintenance Plan.

Soil Boring Logs

As per NJDEP BMP Manual Ch.8 (Feb., 2004), if any soil borings were taken prior to construction, a copy of the soil boring logs should be included in this Maintenance Plan.

Local, State, Federal Permits

As per NJDEP BMP Manual Ch. 8 (Feb., 2004), local, state, or federal permits related to the stormwater management measures for this development should be included in this Maintenance Plan. See Cost Estimate Section of This Maintenance Plan for more information. The requirement to obtain State permits depends on specific circumstances, such as, but not limited to, the specific design of the stormwater management measures, the maintenance

actions, the access and disturbance, the disposal methods, the location of disposal, the method to empty a basin, the method to dredge the basin, the pollutants in the basin, the damages to the basin, and the method to repair the basin.

Check Maintenance Guidance in NJDEP Stormwater Management Website for details and links to the relevant permits and program areas (http://www.njstormwater.org).

Safety Regulations and Requirements

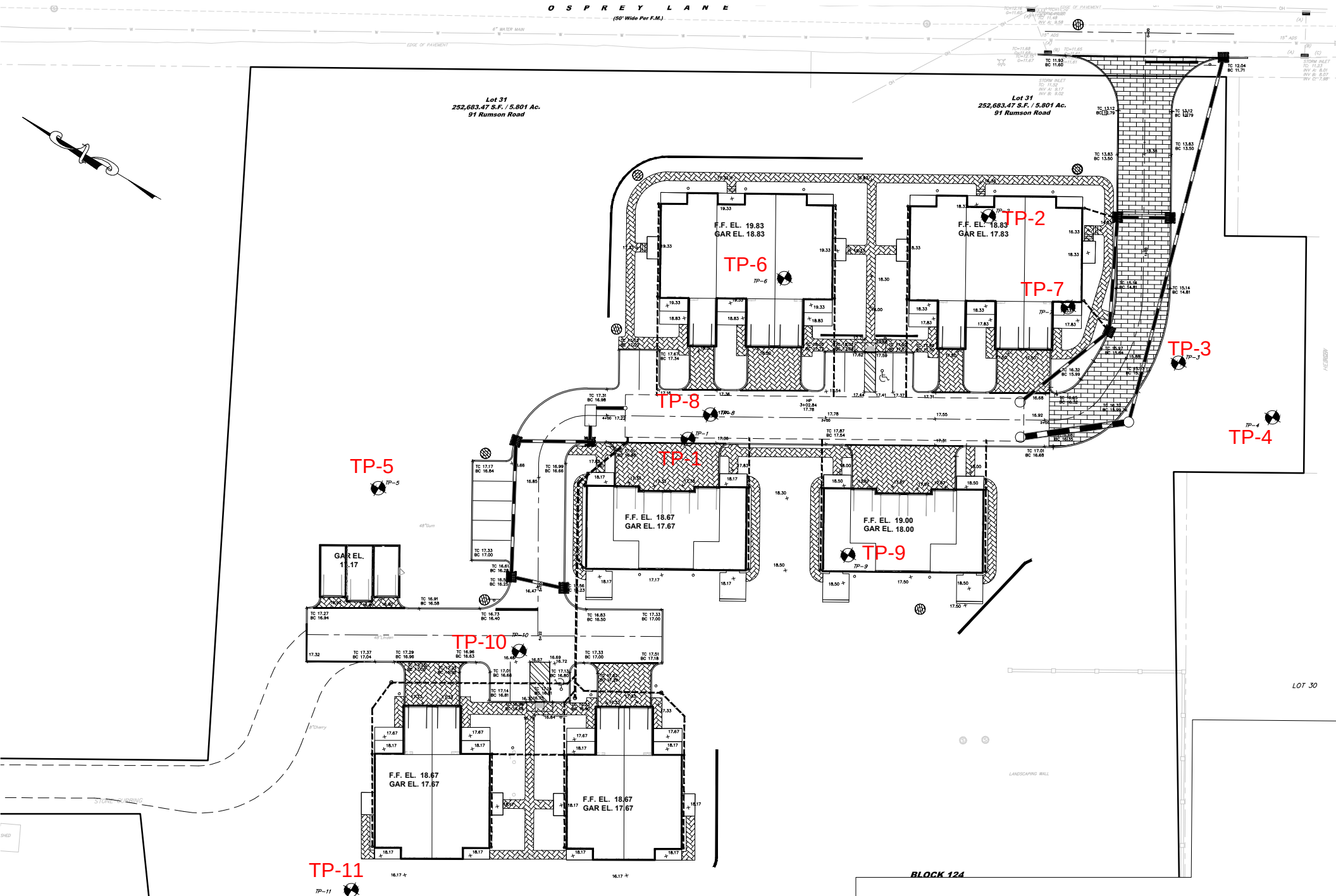
As per NJDEP BMP Manual Ch. 8 (Feb., 2004), all local ordinances and state and federal regulations regarding occupational safety should be included in this Maintenance Plan.

Devices/Tools/Equipment Operation and Maintenance Manual and Warranties

As per NJDEP BMP Manual Ch. 8 (Feb., 2004), maintenance, repair, and replacement instructions for specialized, proprietary, and nonstandard equipment, tools, supplies, manufacturers' product instructions, and user manuals should be included in this Maintenance Plan.

Attach Documents Here

TEST PIT LOCATION MAP



FRENCH & PARRELLO ASSOCIATES, P.A.
1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

RUMSON ROAD TOWNHOUSE
MAJOR SITE PLAN
BLOCK 124, LOT 31
Borough of Rumson, Monmouth County NJ
(FPA NO. 15053.001)

SOIL LOG NO.: TP-1

SHEET NO.: 1 OF 11

DATE: 08/15/2019

GROUND ELEVATION: 15.00
WATER ELEVATION: 9.50
DEPTH OF WATER: **66”**
ESHWT DEPTH: 56”
ESHWT ELEVATION: 10.33

DEPTH	DESCRIPTION
0” - 14”	Topsoil
14” - 26”	Dark Yellowish Brown *(10YR4/6)* **Silt loam**; crumb, loose
26” - 39”	Yellowish Brown *(10YR5/6)* **Sandy clay loam**; crumb, loose
39” - 56”	Dark Yellowish Brown *(10YR3/6)* **Silty clay loam**; crumb, friable
56” - 70”	Dark Yellowish Brown *(10YR3/6)* **Sandy clay loam**; crumb, friable with common, medium, distinct light gray *(10YR 7/1)* mottles

END OF SOIL LOG

Notes:

Seepage at 66”

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, P.E. Date: / /____
N.J.P.E. License No. 45149

FRENCH & PARRELLO ASSOCIATES, P.A.

1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

RUMSON ROAD TOWNHOUSE
MAJOR SITE PLAN
BLOCK 124, LOT 31
Borough of Rumson, Monmouth County NJ
(FPA NO. 15053.001)

SOIL LOG NO.: TP-2

SHEET NO.: 2 OF 11

DATE: 08/15/2019

GROUND ELEVATION: 13.00
WATER ELEVATION: 8.00
DEPTH OF WATER: **60”**
ESHWT DEPTH: 47”
ESHWT ELEVATION: 9.08

DEPTH	DESCRIPTION
0” - 7”	Topsoil
7” - 22”	Dark Yellowish Brown *(10YR4/4)* **Silt loam**; crumb, friable
22” - 47”	Yellowish Brown *(10YR5/6)* **Silty clay loam**; crumb, friable
47” - 50”	Dark Yellowish Brown *(10YR3/6)* **Sandy clay**; subangular blocky, friable with few, fine, faint grayish brown *(10YR5/2)* mottles
50” - 70”	Dark Yellowish Brown *(10YR3/6)* **Sandy loam**; subangular blocky, friable with common, medium, distinct gray *(10YR6/1)* mottles

END OF SOIL LOG

Notes:

Seepage at 60”

Signature of Soil Evaluator: _____ Date: ___/___/____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, P.E. Date: ___/___/____
N.J.P.E. License No. 45149

FRENCH & PARRELLO ASSOCIATES, P.A.

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Wall, New Jersey 07719

SOIL LOG

RUMSON ROAD TOWNHOUSE
MAJOR SITE PLAN
BLOCK 124, LOT 31
Borough of Rumson, Monmouth County NJ
(FPA NO. 15053.001)

SOIL LOG NO.: TP-3

SHEET NO.: 3 OF 11

DATE: 08/15/2019

GROUND ELEVATION: 12.00
WATER ELEVATION: 7.17
DEPTH OF WATER: **58”**
ESHWT DEPTH: 43”
ESHWT ELEVATION: 8.42

DEPTH	DESCRIPTION
0” - 12”	Topsoil
12” - 43”	Yellowish Brown *(10YR 5/6)* **silty clay loam**, crumb, friable
43” – 58”	Dark Yellowish Brown *(10YR 4/6)* **sandy clay loam**, subangular blocky, friable with common, medium, distinct gray *(10YR 6/1*) mottles
58” – 72”	Dark Yellowish Brown *(10YR 3/6)* **sandy loam**, subangular blocky, friable with common, medium, distinct gray *(10YR 6/1*) mottles

END OF SOIL LOG

Notes:

Seepage at 58”

Signature of Soil Evaluator: _____ Date: ___/___/____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, P.E. Date: ___/___/____
N.J.P.E. License No. 45149

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SOIL LOG

RUMSON ROAD TOWNHOUSE
MAJOR SITE PLAN
BLOCK 124, LOT 31
Borough of Rumson, Monmouth County NJ
(FPA NO. 15053.001)

SOIL LOG NO.: TP-4

SHEET NO.: 4 OF 11

DATE: 9/10/2018

GROUND ELEVATION: 11.5
WATER ELEVATION: 7.33
DEPTH OF WATER: **50"**
ESHWT DEPTH: 36"
ESHWT ELEVATION: 8.50

DEPTH	DESCRIPTION
0" - 8"	Topsoil
8" - 36"	Yellowish Brown *(10YR 5/6)* **silty clay loam**, crumb, friable
36" – 68"	Dark Yellowish Brown *(10YR 4/6)* **sandy clay loam**, crumb, loose with common, medium distinct light brownish gray *(10YR 6/2)* mottles

END OF SOIL LOG

Notes:

Seepage at 50"

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, P.E. Date: / /____
N.J.P.E. License No. 45149

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SOIL LOG

RUMSON ROAD TOWNHOUSE
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SOIL LOG NO.: TP-5

SHEET NO.: 5 OF 11

DATE: 9/10/2018

GROUND ELEVATION: 16.40
WATER ELEVATION: 11.65
DEPTH OF WATER: **57”**
ESHWT DEPTH: 57”
ESHWT ELEVATION: 11.65

DEPTH	DESCRIPTION
0” - 12”	Topsoil
12” - 27”	Dark Yellowish Brown *(10YR 4/6)* silt **loam**, crumb, loose
27” - 80”	Dark Yellowish Brown *(10YR 3/6)* **silty clay loam**, crumb, friable
80”- 96”	Dark Yellowish Brown *(10R 3/6)* **sandy clay loam**; crumb, friable with common, medium, distinct pale brown *(10YR 6/3)* mottles

END OF SOIL LOG

Notes:

Seepage at 57”

Signature of Soil Evaluator: _____ Date: ___/___/____
Mark Kalusz, EIT

Signature of Professional Engineer: _____ Date: ___/___/____
Brian R. Decina, P.E.
N.J.P.E. License No. 45149

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SOIL LOG

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SOIL LOG NO.: TP-6

SHEET NO.: 6 OF 11

DATE: 01-14-2021

GROUND ELEVATION: 14.0
WATER ELEVATION: 9.7
DEPTH OF WATER: **52”**
ESHWT DEPTH: 50”
ESHWT ELEVATION: 9.8

DEPTH	DESCRIPTION
0” - 8”	Topsoil
8” - 22”	Yellowish Brown *(10YR 5/8)* **sandy clay loam**, subangular blocky, friable
22” - 50”	Dark Yellowish Brown *(10YR 3/6)* **sandy loam**, crumb, friable
50”- 70”	Light Brownish Gray *(10R 6/2)* **sandy loam**; crumb, friable with common, medium, distinct yellowish red *(5YR 4/6)* mottles
70”- 90”	Dark Yellowish Brown *(10YR 5/6)* **sandy loam**, crumb, friable

END OF SOIL LOG

Notes:

Seepage at 52”

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, P.E.
N.J.P.E. License No. 45149
Date: / /____

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(FPA NO. 15053.001)

SOIL LOG NO.: TP-7

SHEET NO.: 7 OF 11

DATE: 01-14-2021

GROUND ELEVATION: 13.0
WATER ELEVATION: 8.0
DEPTH OF WATER: **60”**
ESHWT DEPTH: 54”
ESHWT ELEVATION: 8.5

DEPTH	DESCRIPTION
0” - 9”	Topsoil
9” - 24”	Yellowish Brown *(10YR 5/8)* **sandy clay loam**, subangular blocky, friable
24” - 54”	Dark Yellowish Brown *(10YR 3/6)* **sandy loam**, crumb, friable
54”- 72”	Light Brownish Gray *(10R 6/2)* **sandy loam**; crumb, friable with common, medium, distinct yellowish red *(5YR 4/6)* mottles
72”- 96”	Dark Yellowish Brown *(10YR 5/6)* **sandy loam**, crumb, friable

END OF SOIL LOG

Notes:

Seepage at 60”

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, P.E. Date: / /____
N.J.P.E. License No. 45149

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SOIL LOG

RUMSON ROAD TOWNHOUSE
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SOIL LOG NO.: TP-8

SHEET NO.: 8 OF 11

DATE: 01-14-2021

GROUND ELEVATION: 14.8
WATER ELEVATION: 9.6
DEPTH OF WATER: **62”**
ESHWT DEPTH: 57”
ESHWT ELEVATION: 10.05

DEPTH	DESCRIPTION
0” - 8”	Topsoil
8” - 22”	Yellowish Brown *(10YR 5/8)* **sandy clay loam**, subangular blocky, friable
22” - 57”	Dark Yellowish Brown *(10YR 3/6)* **sandy loam**, crumb, friable
57”- 74”	Light Brownish Gray *(10R 6/2)* **sandy loam**; crumb, friable with common, medium, distinct yellowish red *(5YR 4/6)* mottles
74”- 92”	Dark Yellowish Brown *(10YR 5/6)* **sandy loam**, crumb, friable

END OF SOIL LOG

Notes:

Seepage at 62”

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, P.E.
N.J.P.E. License No. 45149
Date: / /____

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(FPA NO. 15053.001)

SOIL LOG NO.: TP-9

SHEET NO.: 9 OF 11

DATE: 01-14-2021

GROUND ELEVATION: 14.0
WATER ELEVATION: 9.2
DEPTH OF WATER: **58”**
ESHWT DEPTH: 55”
ESHWT ELEVATION: 9.4

DEPTH	DESCRIPTION
0” - 4”	Topsoil
4” - 25”	Yellowish Brown *(10YR 5/8)* **sandy clay loam**, subangular blocky, friable
25” - 55”	Dark Yellowish Brown *(10YR 3/6)* **sandy loam**, crumb, friable
55”- 77”	Light Brownish Gray *(10R 6/2)* **sandy loam**; crumb, friable with common, medium, distinct yellowish red *(5YR 4/6)* mottles
77”- 92”	Dark Yellowish Brown *(10YR 5/6)* **sandy loam**, crumb, friable

END OF SOIL LOG

Notes:

Seepage at 58”

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, P.E. Date: / /____
N.J.P.E. License No. 45149

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SOIL LOG

RUMSON ROAD TOWNHOUSE
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(FPA NO. 15053.001)

SOIL LOG NO.: TP-10

SHEET NO.: 10 OF 11

DATE: 01-14-2021

GROUND ELEVATION: 16.2
WATER ELEVATION: 10.0
DEPTH OF WATER: **74”**
ESHWT DEPTH: 67”
ESHWT ELEVATION: 10.6

DEPTH	DESCRIPTION
0” - 8”	Topsoil
8” - 32”	Yellowish Brown *(10YR 5/8)* **sandy clay loam**, subangular blocky, friable
32” - 67”	Dark Yellowish Brown *(10YR 3/6)* **sandy loam**, crumb, friable
67”- 88”	Light Brownish Gray *(10R 6/2)* **sandy loam**; crumb, friable with common, medium, distinct yellowish red *(5YR 4/6)* mottles
88”- 103”	Dark Yellowish Brown *(10YR 5/6)* **sandy loam**, crumb, friable

END OF SOIL LOG

Notes:

Seepage at 74”

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

Signature of Professional Engineer: _____ Date: / /____
Brian R. Decina, P.E.
N.J.P.E. License No. 45149

FRENCH & PARRELLO ASSOCIATES, P.A.
1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

RUMSON ROAD TOWNHOUSE
MAJOR SITE PLAN
BLOCK 124, LOT 31
Borough of Rumson, Monmouth County NJ
(FPA NO. 15053.001)

SOIL LOG NO.: TP-11

SHEET NO.: 11 OF 11

DATE: 01-14-2021

GROUND ELEVATION: 14.8
WATER ELEVATION: 10.2
DEPTH OF WATER: **55”**
ESHWT DEPTH: 40”
ESHWT ELEVATION: 11.5

DEPTH	DESCRIPTION
0” - 10”	Topsoil
10” - 21”	Yellowish Brown *(10YR 5/8)* **sandy clay loam**, subangular blocky, friable
21” - 40”	Dark Yellowish Brown *(10YR 3/6)* **sandy loam**, crumb, friable
40”- 70”	Light Brownish Gray *(10R 6/2)* **sandy loam**; crumb, friable with common, medium, distinct yellowish red *(5YR 4/6)* mottles
70”- 92”	Dark Yellowish Brown *(10YR 5/6)* **sandy loam**, crumb, friable

END OF SOIL LOG

Notes:

Seepage at 55”

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, P.E. Date: / /____
N.J.P.E. License No. 45149

Part II- Field Manuals

Attachment of Field Manuals
for Stormwater Management Measures on this Site

As per N.J.A.C. 7:8-5.8(b)&(e), preventative and corrective maintenance shall be performed to maintain the function of stormwater management measures, including repair or replacement of the structure; removal of sediment, debris or trash; restoration of eroded areas; snow and ice removal; fence repair or replacement; restoration of vegetation; repair or replacement of non-vegetated linings, and removal of rodent/wildlife and repair/restoration to damaged affected areas caused by them.

Each Field Manual attached to this Maintenance Plan is a separate document pertaining to one specific stormwater management measure, and should be used by inspections and maintenance crews in order to carry out the maintenance work required by N.J.A.C. 7:8-5.8(e).

Field Manual for Basin #1
Field Manual for Water Quality Device, MTD #1

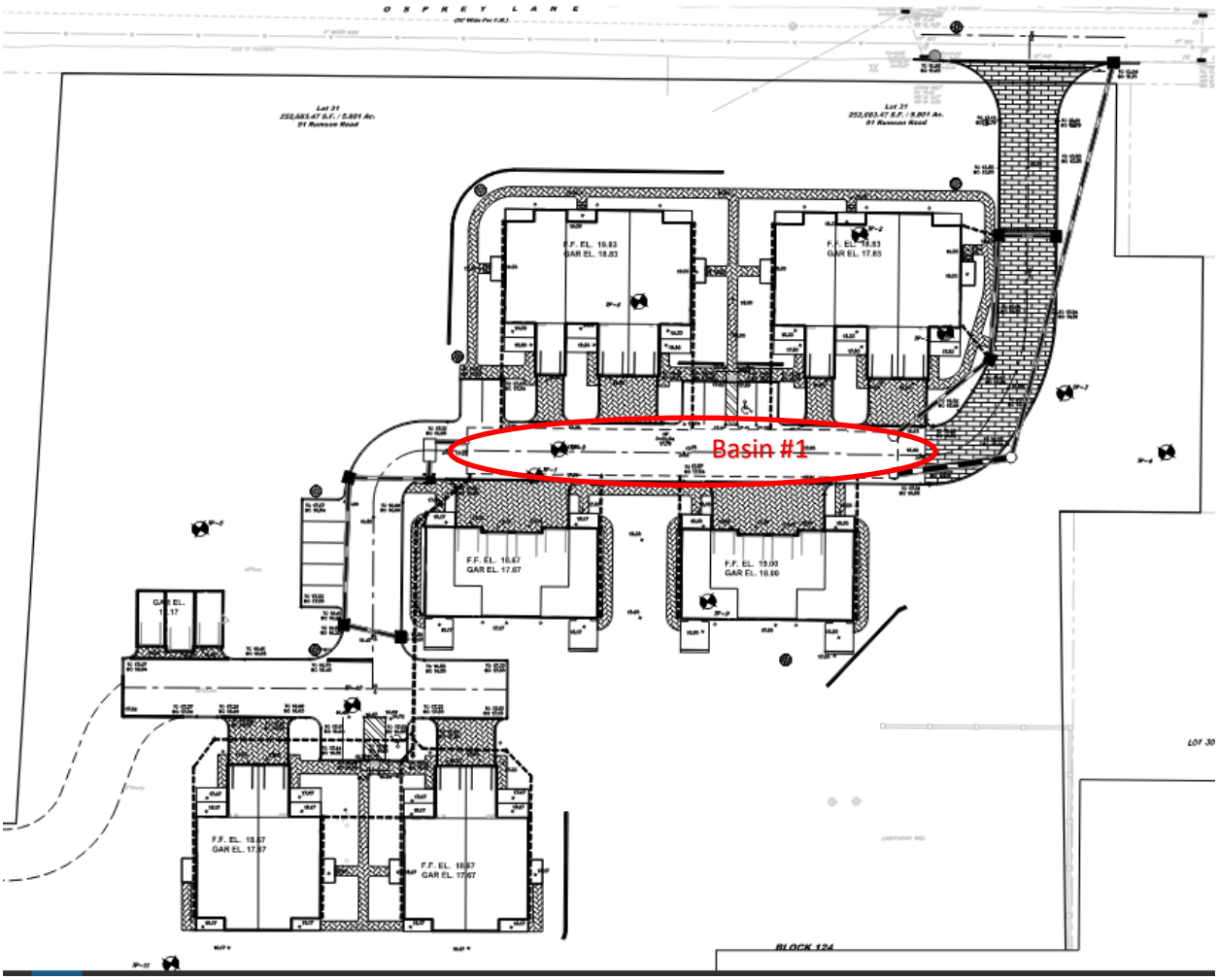
Basin #1
on the Location Map

Development Name: **Lauriston Park**

Township, County: **Borough of Rumson, Monmouth**
Location of Basin: X: 40.361171, Y: -73.994373

Under site driveway, 300' from entrance

Location Map



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Basin #1 Overview

Functionality
A detention basin is a stormwater management facility which provides temporary storage of stormwater runoff.

Proper care and attention in the long-term maintenance of the stormwater management measure is critically important to the safety and health of the public.

Type of BMP – Dry Basin
A detention basin is a type of ***dry*** basin. Dry basins must fully drain within 72 hours of the most recent rainfall. Standing water in excess of 72 hours is a sign of basin failure. It may also contribute to mosquito breeding and other health and safety issues. The design drain time shall be closely monitored to ensure that potential failure is recognized early.

Basic Design Information

Hydrology Design Targets

1. The design drain time for the water quality storm is:
   ___**Approximately 5**___ hours.
2. The seasonal high water table of the basin was estimated to be elevation 10.30 during test pits conducted on 1 / 14 / 2021 .
4. The overflow from this basin will be discharged to the existing storm sewer system.

Hydraulic Design Targets

1. The bottom of the basin is at elevation 11.30

Critical Maintenance Features

Collected sediment, if any, shall be removed with vacuum truck and disposed of.

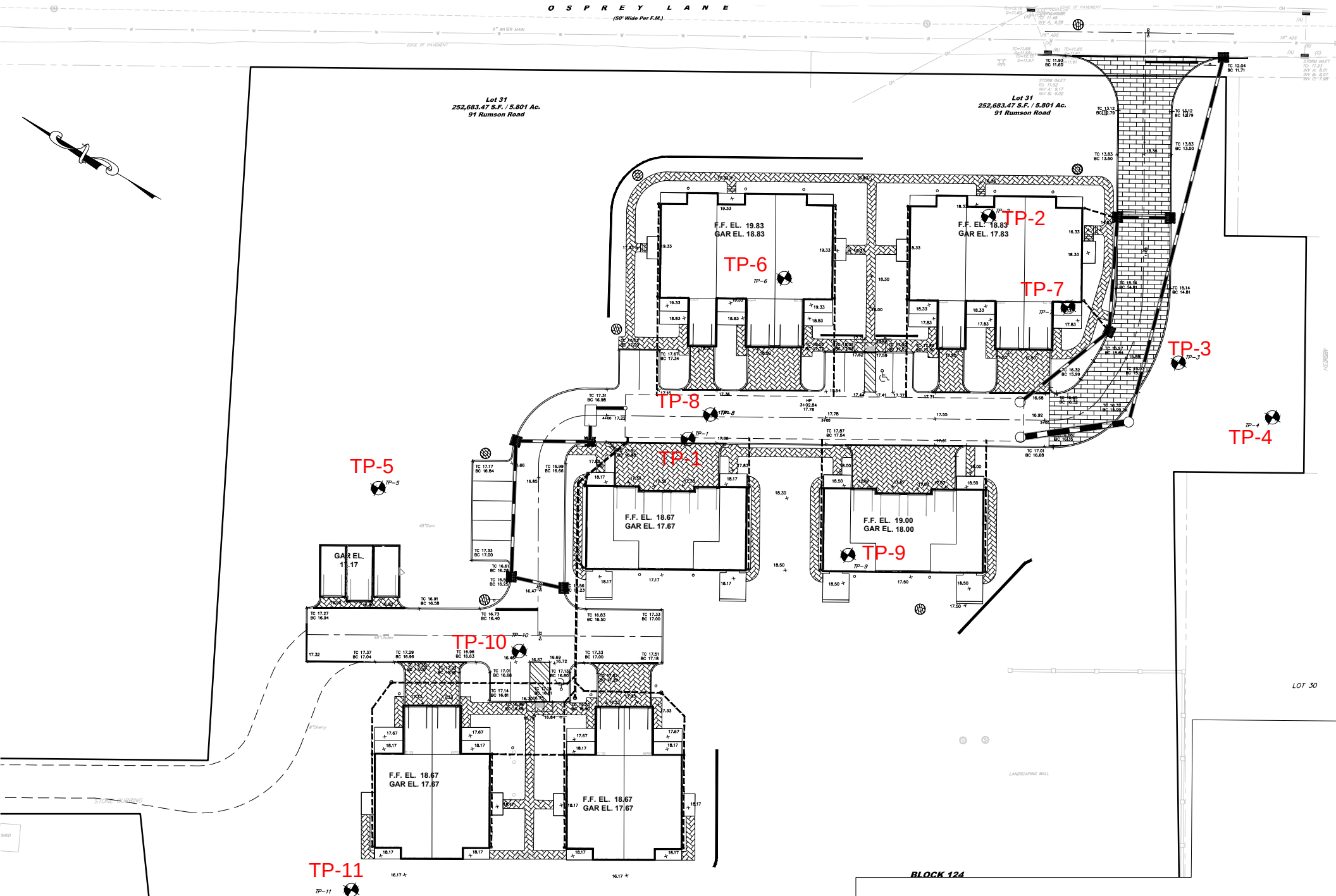
Reference Documents

Documents to be placed in this field manual should include the following:

- As-built Drawings with Drainage Plans
- Soil Boring Logs

Attach Reference Documents Here

TEST PIT LOCATION MAP



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SOIL LOG

RUMSON ROAD TOWNHOUSE
MAJOR SITE PLAN
BLOCK 124, LOT 31
Borough of Rumson, Monmouth County NJ
(FPA NO. 15053.001)

SOIL LOG NO.: TP-1

SHEET NO.: 1 OF 11

DATE: 08/15/2019

GROUND ELEVATION: 15.00
WATER ELEVATION: 9.50
DEPTH OF WATER: **66”**
ESHWT DEPTH: 56”
ESHWT ELEVATION: 10.33

DEPTH	DESCRIPTION
0” - 14”	Topsoil
14” - 26”	Dark Yellowish Brown *(10YR4/6)* **Silt loam**; crumb, loose
26” - 39”	Yellowish Brown *(10YR5/6)* **Sandy clay loam**; crumb, loose
39” - 56”	Dark Yellowish Brown *(10YR3/6)* **Silty clay loam**; crumb, friable
56” - 70”	Dark Yellowish Brown *(10YR3/6)* **Sandy clay loam**; crumb, friable with common, medium, distinct light gray *(10YR 7/1)* mottles

END OF SOIL LOG

Notes:

Seepage at 66”

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, P.E. Date: / /____
N.J.P.E. License No. 45149

FRENCH & PARRELLO ASSOCIATES, P.A.

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Wall, New Jersey 07719

SOIL LOG

RUMSON ROAD TOWNHOUSE
MAJOR SITE PLAN
BLOCK 124, LOT 31
Borough of Rumson, Monmouth County NJ
(FPA NO. 15053.001)

SOIL LOG NO.: TP-2

SHEET NO.: 2 OF 11

DATE: 08/15/2019

GROUND ELEVATION: 13.00
WATER ELEVATION: 8.00
DEPTH OF WATER: **60”**
ESHWT DEPTH: 47”
ESHWT ELEVATION: 9.08

DEPTH	DESCRIPTION
0” - 7”	Topsoil
7” - 22”	Dark Yellowish Brown *(10YR4/4)* **Silt loam**; crumb, friable
22” - 47”	Yellowish Brown *(10YR5/6)* **Silty clay loam**; crumb, friable
47” - 50”	Dark Yellowish Brown *(10YR3/6)* **Sandy clay**; subangular blocky, friable with few, fine, faint grayish brown *(10YR5/2)* mottles
50” - 70”	Dark Yellowish Brown *(10YR3/6)* **Sandy loam**; subangular blocky, friable with common, medium, distinct gray *(10YR6/1)* mottles

END OF SOIL LOG

Notes:

Seepage at 60”

Signature of Soil Evaluator: _____ Date: ___/___/____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, P.E. Date: ___/___/____
N.J.P.E. License No. 45149

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SOIL LOG

RUMSON ROAD TOWNHOUSE
MAJOR SITE PLAN
BLOCK 124, LOT 31
Borough of Rumson, Monmouth County NJ
(FPA NO. 15053.001)

SOIL LOG NO.: TP-3

SHEET NO.: 3 OF 11

DATE: 08/15/2019

GROUND ELEVATION: 12.00
WATER ELEVATION: 7.17
DEPTH OF WATER: **58”**
ESHWT DEPTH: 43”
ESHWT ELEVATION: 8.42

DEPTH	DESCRIPTION
0” - 12”	Topsoil
12” - 43”	Yellowish Brown *(10YR 5/6)* **silty clay loam**, crumb, friable
43” – 58”	Dark Yellowish Brown *(10YR 4/6)* **sandy clay loam**, subangular blocky, friable with common, medium, distinct gray *(10YR 6/1*) mottles
58” – 72”	Dark Yellowish Brown *(10YR 3/6)* **sandy loam**, subangular blocky, friable with common, medium, distinct gray *(10YR 6/1*) mottles

END OF SOIL LOG

Notes:

Seepage at 58”

Signature of Soil Evaluator: _____ Date: ___/___/____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, P.E. Date: ___/___/____
N.J.P.E. License No. 45149

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Wall, New Jersey 07719

SOIL LOG

RUMSON ROAD TOWNHOUSE
MAJOR SITE PLAN
BLOCK 124, LOT 31
Borough of Rumson, Monmouth County NJ
(FPA NO. 15053.001)

SOIL LOG NO.: TP-4

SHEET NO.: 4 OF 11

DATE: 9/10/2018

GROUND ELEVATION: 11.5
WATER ELEVATION: 7.33
DEPTH OF WATER: **50"**
ESHWT DEPTH: 36"
ESHWT ELEVATION: 8.50

DEPTH	DESCRIPTION
0" - 8"	Topsoil
8" - 36"	Yellowish Brown *(10YR 5/6)* **silty clay loam**, crumb, friable
36" – 68"	Dark Yellowish Brown *(10YR 4/6)* **sandy clay loam**, crumb, loose with common, medium distinct light brownish gray *(10YR 6/2)* mottles

END OF SOIL LOG

Notes:

Seepage at 50"

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, P.E. Date: / /____
N.J.P.E. License No. 45149

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Wall, New Jersey 07719

SOIL LOG

RUMSON ROAD TOWNHOUSE
MAJOR SITE PLAN
BLOCK 124, LOT 31
Borough of Rumson, Monmouth County NJ
(FPA NO. 15053.001)

SOIL LOG NO.: TP-5

SHEET NO.: 5 OF 11

DATE: 9/10/2018

GROUND ELEVATION: 16.40
WATER ELEVATION: 11.65
DEPTH OF WATER: **57”**
ESHWT DEPTH: 57”
ESHWT ELEVATION: 11.65

DEPTH	DESCRIPTION
0” - 12”	Topsoil
12” - 27”	Dark Yellowish Brown *(10YR 4/6)* silt **loam**, crumb, loose
27” - 80”	Dark Yellowish Brown *(10YR 3/6)* **silty clay loam**, crumb, friable
80”- 96”	Dark Yellowish Brown *(10R 3/6)* **sandy clay loam**; crumb, friable with common, medium, distinct pale brown *(10YR 6/3)* mottles

END OF SOIL LOG

Notes:

Seepage at 57”

Signature of Soil Evaluator: _____ Date: ___/___/____
Mark Kalusz, EIT

Signature of Professional Engineer: _____ Date: ___/___/____
Brian R. Decina, P.E.
N.J.P.E. License No. 45149

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Wall, New Jersey 07719

SOIL LOG

RUMSON ROAD TOWNHOUSE
MAJOR SITE PLAN
BLOCK 124, LOT 31
Borough of Rumson, Monmouth County NJ
(FPA NO. 15053.001)

SOIL LOG NO.: TP-6

SHEET NO.: 6 OF 11

DATE: 01-14-2021

GROUND ELEVATION: 14.0
WATER ELEVATION: 9.7
DEPTH OF WATER: **52”**
ESHWT DEPTH: 50”
ESHWT ELEVATION: 9.8

DEPTH	DESCRIPTION
0” - 8”	Topsoil
8” - 22”	Yellowish Brown *(10YR 5/8)* **sandy clay loam**, subangular blocky, friable
22” - 50”	Dark Yellowish Brown *(10YR 3/6)* **sandy loam**, crumb, friable
50”- 70”	Light Brownish Gray *(10R 6/2)* **sandy loam**; crumb, friable with common, medium, distinct yellowish red *(5YR 4/6)* mottles
70”- 90”	Dark Yellowish Brown *(10YR 5/6)* **sandy loam**, crumb, friable

END OF SOIL LOG

Notes:

Seepage at 52”

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, P.E.
N.J.P.E. License No. 45149
Date: / /____

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Wall, New Jersey 07719

SOIL LOG

RUMSON ROAD TOWNHOUSE
MAJOR SITE PLAN
BLOCK 124, LOT 31
Borough of Rumson, Monmouth County NJ
(FPA NO. 15053.001)

SOIL LOG NO.: TP-7

SHEET NO.: 7 OF 11

DATE: 01-14-2021

GROUND ELEVATION: 13.0
WATER ELEVATION: 8.0
DEPTH OF WATER: **60”**
ESHWT DEPTH: 54”
ESHWT ELEVATION: 8.5

DEPTH	DESCRIPTION
0” - 9”	Topsoil
9” - 24”	Yellowish Brown *(10YR 5/8)* **sandy clay loam**, subangular blocky, friable
24” - 54”	Dark Yellowish Brown *(10YR 3/6)* **sandy loam**, crumb, friable
54”- 72”	Light Brownish Gray *(10R 6/2)* **sandy loam**; crumb, friable with common, medium, distinct yellowish red *(5YR 4/6)* mottles
72”- 96”	Dark Yellowish Brown *(10YR 5/6)* **sandy loam**, crumb, friable

END OF SOIL LOG

Notes:

Seepage at 60”

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, P.E. Date: / /____
N.J.P.E. License No. 45149

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Wall, New Jersey 07719

SOIL LOG

RUMSON ROAD TOWNHOUSE
MAJOR SITE PLAN
BLOCK 124, LOT 31
Borough of Rumson, Monmouth County NJ
(FPA NO. 15053.001)

SOIL LOG NO.: TP-8

SHEET NO.: 8 OF 11

DATE: 01-14-2021

GROUND ELEVATION: 14.8
WATER ELEVATION: 9.6
DEPTH OF WATER: **62”**
ESHWT DEPTH: 57”
ESHWT ELEVATION: 10.05

DEPTH	DESCRIPTION
0” - 8”	Topsoil
8” - 22”	Yellowish Brown *(10YR 5/8)* **sandy clay loam**, subangular blocky, friable
22” - 57”	Dark Yellowish Brown *(10YR 3/6)* **sandy loam**, crumb, friable
57”- 74”	Light Brownish Gray *(10R 6/2)* **sandy loam**; crumb, friable with common, medium, distinct yellowish red *(5YR 4/6)* mottles
74”- 92”	Dark Yellowish Brown *(10YR 5/6)* **sandy loam**, crumb, friable

END OF SOIL LOG

Notes:

Seepage at 62”

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, P.E.
N.J.P.E. License No. 45149
Date: / /____

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Wall, New Jersey 07719

SOIL LOG

RUMSON ROAD TOWNHOUSE
MAJOR SITE PLAN
BLOCK 124, LOT 31
Borough of Rumson, Monmouth County NJ
(FPA NO. 15053.001)

SOIL LOG NO.: TP-9

SHEET NO.: 9 OF 11

DATE: 01-14-2021

GROUND ELEVATION: 14.0
WATER ELEVATION: 9.2
DEPTH OF WATER: **58”**
ESHWT DEPTH: 55”
ESHWT ELEVATION: 9.4

DEPTH	DESCRIPTION
0” - 4”	Topsoil
4” - 25”	Yellowish Brown *(10YR 5/8)* **sandy clay loam**, subangular blocky, friable
25” - 55”	Dark Yellowish Brown *(10YR 3/6)* **sandy loam**, crumb, friable
55”- 77”	Light Brownish Gray *(10R 6/2)* **sandy loam**; crumb, friable with common, medium, distinct yellowish red *(5YR 4/6)* mottles
77”- 92”	Dark Yellowish Brown *(10YR 5/6)* **sandy loam**, crumb, friable

END OF SOIL LOG

Notes:

Seepage at 58”

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, P.E. Date: / /____
N.J.P.E. License No. 45149

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1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

RUMSON ROAD TOWNHOUSE
MAJOR SITE PLAN
BLOCK 124, LOT 31
Borough of Rumson, Monmouth County NJ
(FPA NO. 15053.001)

SOIL LOG NO.: TP-10

SHEET NO.: 10 OF 11

DATE: 01-14-2021

GROUND ELEVATION: 16.2
WATER ELEVATION: 10.0
DEPTH OF WATER: **74”**
ESHWT DEPTH: 67”
ESHWT ELEVATION: 10.6

DEPTH	DESCRIPTION
0” - 8”	Topsoil
8” - 32”	Yellowish Brown *(10YR 5/8)* **sandy clay loam**, subangular blocky, friable
32” - 67”	Dark Yellowish Brown *(10YR 3/6)* **sandy loam**, crumb, friable
67”- 88”	Light Brownish Gray *(10R 6/2)* **sandy loam**; crumb, friable with common, medium, distinct yellowish red *(5YR 4/6)* mottles
88”- 103”	Dark Yellowish Brown *(10YR 5/6)* **sandy loam**, crumb, friable

END OF SOIL LOG

Notes:

Seepage at 74”

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

Signature of Professional Engineer: _____ Date: / /____
Brian R. Decina, P.E.
N.J.P.E. License No. 45149

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SOIL LOG

RUMSON ROAD TOWNHOUSE
MAJOR SITE PLAN
BLOCK 124, LOT 31
Borough of Rumson, Monmouth County NJ
(FPA NO. 15053.001)

SOIL LOG NO.: TP-11

SHEET NO.: 11 OF 11

DATE: 01-14-2021

GROUND ELEVATION: 14.8
WATER ELEVATION: 10.2
DEPTH OF WATER: **55”**
ESHWT DEPTH: 40”
ESHWT ELEVATION: 11.5

DEPTH	DESCRIPTION
0” - 10”	Topsoil
10” - 21”	Yellowish Brown *(10YR 5/8)* **sandy clay loam**, subangular blocky, friable
21” - 40”	Dark Yellowish Brown *(10YR 3/6)* **sandy loam**, crumb, friable
40”- 70”	Light Brownish Gray *(10R 6/2)* **sandy loam**; crumb, friable with common, medium, distinct yellowish red *(5YR 4/6)* mottles
70”- 92”	Dark Yellowish Brown *(10YR 5/6)* **sandy loam**, crumb, friable

END OF SOIL LOG

Notes:

Seepage at 55”

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

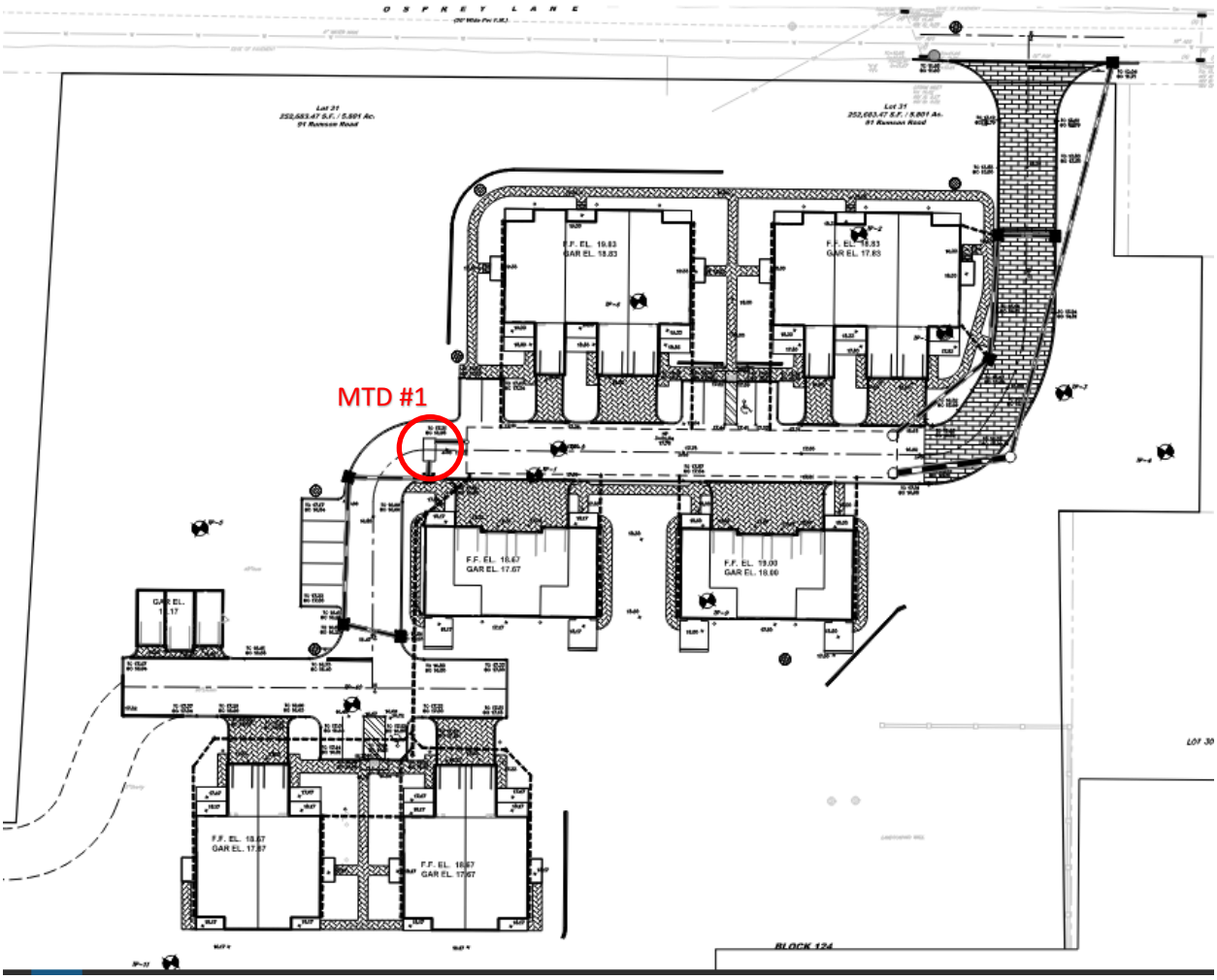
Signature of Professional Engineer: _____
Brian R. Decina, P.E. Date: / /____
N.J.P.E. License No. 45149

Water Quality Device
MTD #1 on the Location Map

Development Name: **Lauriston Park**

Township, County: **Borough of Rumson, Monmouth**
Location of Basin: X: 40.3612263, Y: -73.9946367

Location Description: **Southwest of Basin #1**



Location Map

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MTD Overview

Functionality
A Manufactured Treatment Device (MTD) is a pre-fabricated stormwater treatment structure utilizing settling, filtration, absorptive/adsorptive materials, vortex separation, vegetative components, and/or other appropriate technology to remove pollutants from stormwater runoff.

Manufactured treatment devices are intended to capture sediments, metals, hydrocarbons, floatables, and/or other pollutants in stormwater runoff before being conveyed to a storm sewer system, additional stormwater quality treatment measure, or waterbody.

Proper care and attention in the long-term maintenance of the stormwater management measure is critically important to the safety and health of the public.

Type of BMP – Stormwater Treatment Device

Basic Design Information

Hydrology Design Targets

1. The MTD is designed as an online system with an internal bypass.
2. The maximum design storm is Water Quality Design Storm which corresponds to 1.25 inches of rain in **2** hours.
3. The design total suspended solids removal rate is **80** %.

Hydraulic Design Targets

1. Water Quality Design parameters

	MTD-1
Rainfall Depth (inches)	1.25 inch in 2 hours
Peak Flow Rate (cfs)	0.60

Configuration Targets

1. The name of the MTDs are:
   MTD #1: **Kraken Filter**, Model **KF-4-8-72**.

2. The manufacturer of the MTD is **BioClean**.

Critical Maintenance Features

1. Remove accumulated sediment and replace filters, as necessary per the manufacturer's guidelines.

Visual Aid for MTD Maintenance

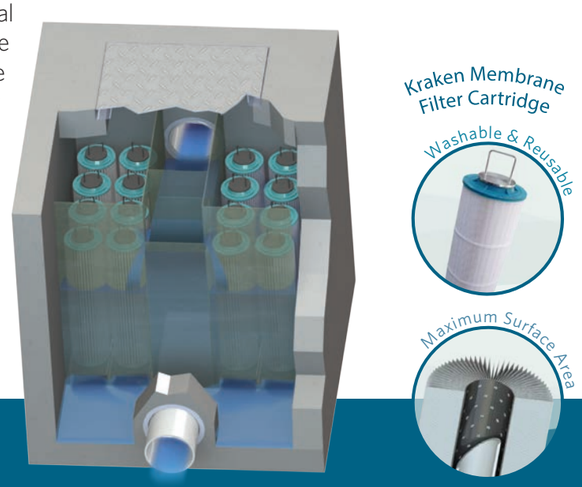
Visual aids for MTD maintenance may be obtained from the manufacturer or may be included in the Operation and Maintenance Manual provided by the manufacturer.

OVERVIEW

The Bio Clean Kraken™ Filter is a state-of-the-art system utilizing advanced membrane filtration, ensuring a high level of removal for not only TSS, but also metals, trash, nutrients, and hydrocarbons. The Kraken™ membrane filter cartridge provides high flow rates and over 170 sq. ft. of surface area. This much surface area allows it to operate at a loading rate of only 0.05 gpm/sq. ft. to ensure maximum performance and minimum maintenance. The Kraken™ Filter's low loading rate successfully overcomes high maintenance requirements and frequent clogging issues often found in other filter systems advertising high loading rates.

Each membrane filter cartridge is lightweight, washable, reusable, and more sustainable than typical granular filled media cartridges. By eliminating the need to purchase new granular media and dispose of spent media, the Kraken™ Filter provides lower life cycle and maintenance costs.

Each filter cartridge is equipped with easy-to-grab handles and is pressure fitted, allowing it to be quickly removed, cleaned, and reattached without the use of tools.



PERFORMANCE

89% REMOVAL OF TSS (NJCAT PSD)

>50% REMOVAL OF PHOSPHORUS (EXPECTED - VARIES WITH PARTICLE SIZE)

99% REMOVAL OF TRASH

>50% REMOVAL OF TOTAL METAL (EXPECTED - VARIES WITH PARTICLE SIZE)

90% REMOVAL OF TOTAL PERCENTAGE HYDROCARBONS (EXPECTED)

ADVANTAGES

- NO GRANULAR MEDIA TO REPLACE
- HIGH FLOW RATES AND MAXIMUM SURFACE AREA
- LOADING RATE OF 0.05 GPM / SQ. FT. FOR MINIMAL MAINTENANCE
- MEMBRANE FILTER CARTRIDGES CAN BE EASILY REMOVED AND CLEANED BY HAND
- BUILT-IN PRETREATMENT CHAMBER CAPTURES TRASH, SEDIMENTS, DEBRIS, AND HYDROCARBONS
- FILTER CARTRIDGE DRIES OUT BETWEEN STORM EVENTS TO PREVENT BIOFILM GROWTH WHICH CAN CAUSE CLOGGING AND OTHER PERFORMANCE ISSUES
- NJDEP ONLINE INSTALLATION APPROVED

APPROVALS

The Kraken™ has received NJCAT Verification for 89% TSS Removal, NJDEP Certification at an 80% TSS removal rate, and additional NJCAT Verification for on-line installations.

TAPE PERFORMANCE

The Kraken™ Filter completed its TAPE field testing in the spring of 2016. The Kraken has met the performance benchmarks for basic treatment (TSS) and Phosphorus. The system features washable and reusable cartridges to reduce overall maintenance costs.

POLLUTANT	AVG. INFLUENT (mg/L)	AVG. EFFLUENT (mg/L)	REMOVAL EFFICIENCY	NOTES
Total Suspended Solids	73.1	7.0	85%	Summary of all data meeting TAPE parameters pertaining to this pollutant.
Total Phosphorus	0.151	0.034	72%	Summary of all data meeting TAPE parameters pertaining to this pollutant.
Suspended Solids Conc.	151.3	6.9	89%	Summary of all data during testing.
Nitrogen (TKN)	1.5	1.0	31%	Utilizing the Kjeldahl method (Total Kjeldahl Nitrogen). Summary of all data during testing.
Fecal Coliform	692	355	60%	Summary of all data during testing.
Motor Oil	4.6	0.7	81%	Summary of all data during testing.
Total Zinc	0.158	0.054	54.3%	Summary of all data during testing.
Total Copper	0.042	0.017	52%	Summary of all data during testing.
Diesel Range Organics	1.2	0.4	65%	Summary of all data during testing.

NOTES: **1.** The Kraken™ Filter was proven effective at infiltration rates of up to 5 in/hr. **2.** A minimum of 10 aliquots were collected for each event. **3.** Sampling was targeted to capture at least 75% of the hydrograph. **4.** Fecal coliform as MPN/100 mL.

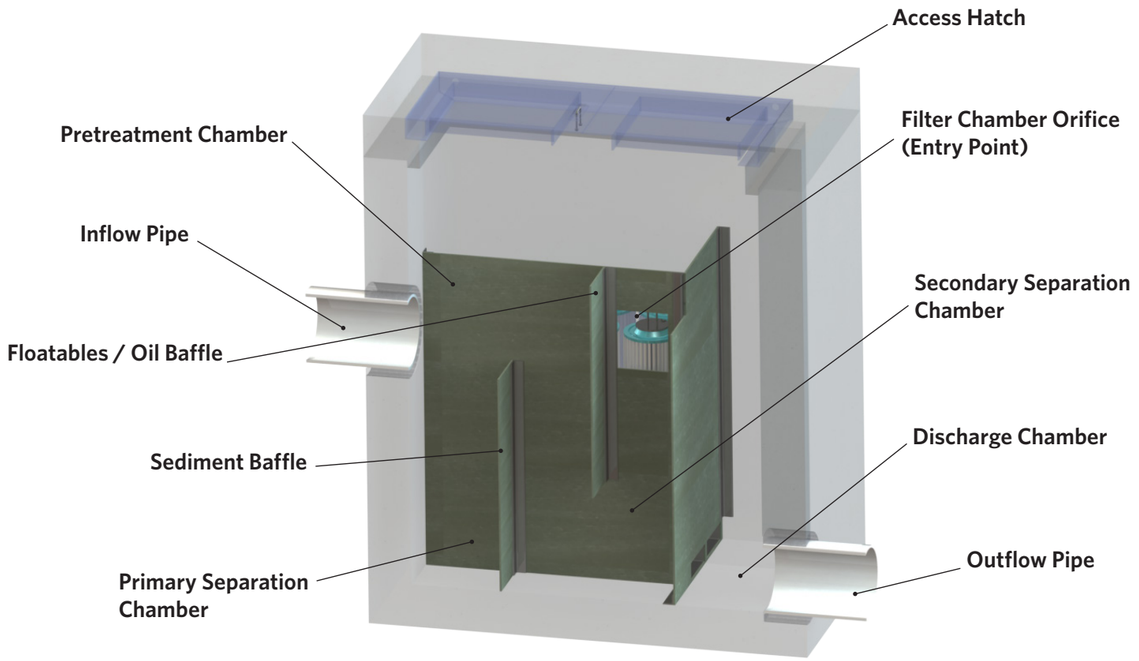
SPECIFICATIONS

Based on Max Cartridge Capacity

MODEL #	STRUCTURE SIZE (ft. x ft.)	CARTRIDGE CAPACITY	MAX MEDIA SURFACE AREA (sq. ft.)	TREATMENT FLOW CAPACITY (cfs)
KF-2.5-4	2.5′ x 4′	4 to 8	1360	0.15
KF-4-4	4′ x 4′	9 to 16	2720	0.30
KF-4-6	4′ x 6′	17 to 24	4080	0.46
KF-4-8	4′ x 8′	25 to 32	5440	0.61
KF-8-8	8′ x 8′	33 to 48	8160	0.91
KF-8-10	8′ x 10′	49 to 65	11220	1.25
KF-8-12	8′ x 12′	66 to 78	13260	1.48
KF-8-14	8′ x 14′	79 to 96	16320	1.82
KF-8-16	8′ x 16′	97 to 114	19380	2.16
KF-10-16	10′ x 16′	115 to 152	25840	2.88

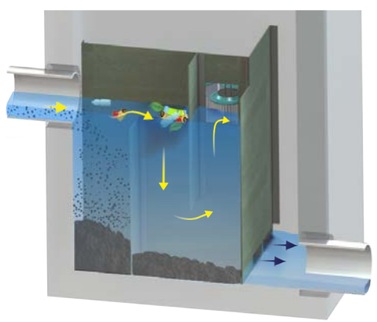
See design manual for list of all models. Many other models and structure sizes are available for higher flows. Please contact us for more details.

OPERATION



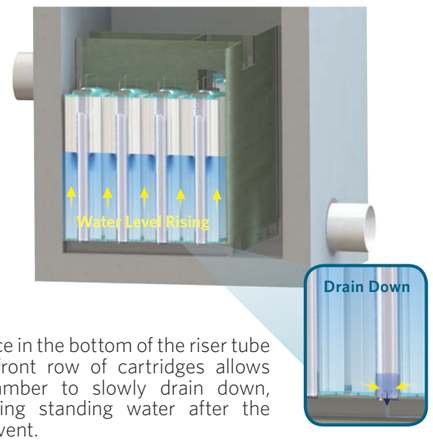
① PRETREATMENT

To reduce loading on the membrane cartridge, runoff is initially passed through the pretreatment chamber to capture trash, hydrcarbons, and sediments. Once runoff is pretreated, it is directed to the filter chambers for primary treatment.



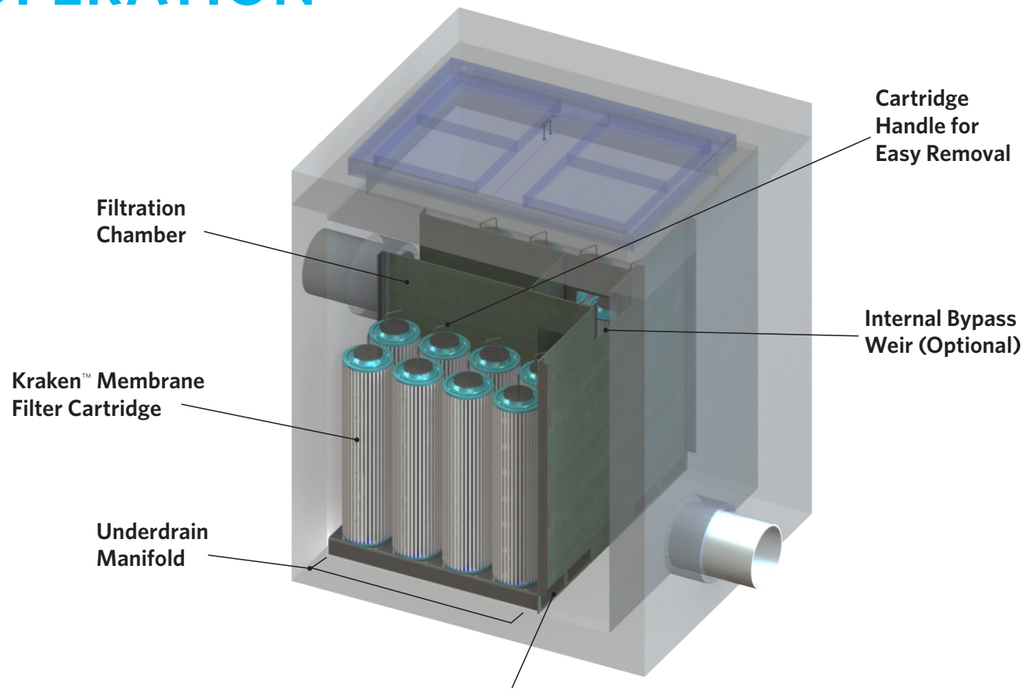
② MEMBRANE FILTRATION FILL-UP

During the fill-up process, a riser tube prevents flow through the membrane cartridge until the water level nears the top of the cartridge. This ensures loading is evenly distributed over the vertical height of the cartridge maximizing efficiency.



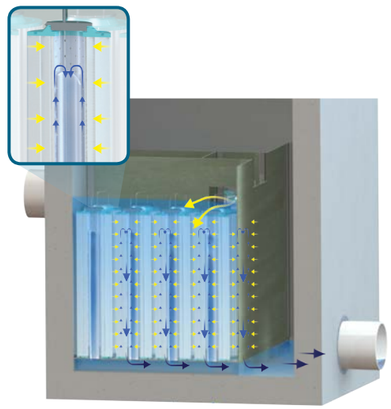
An orifice in the bottom of the riser tube in the front row of cartridges allows the chamber to slowly drain down, eliminating standing water after the storm event.

OPERATION



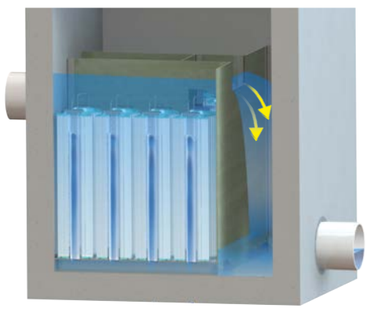
③ MEMBRANE FILTRATION PEAK CAPACITY

As the water level reaches the top of the membrane cartridges, flow through will begin. The riser tube creates an upward flow path within each cartridge to increase performance. Treated water then passes down the riser tube and collects in the underdrain manifold and flows to the discharge chamber.



④ BYPASS

An optional internal bypass is available with most system configurations. When flows exceed the treatment capacity of the system, the water level rises and goes into bypass. High flows are conveyed from the pretreatment chamber directly to the discharge chamber to prevent scouring of fine sediments captured within the filtration chamber.



INSTALLATION

Small footprint reduces installation and shipping costs.

No deep sump chamber (as found with tentacle-type systems), reduces excavation costs.

MAINTENANCE

Lowest lifecycle cost of any media filter with fast and simple maintenance procedures.

Easily cleaned with a standard vacuum truck, and reusable cartridge can be cleaned with a standard garden hose.

Reference Documents

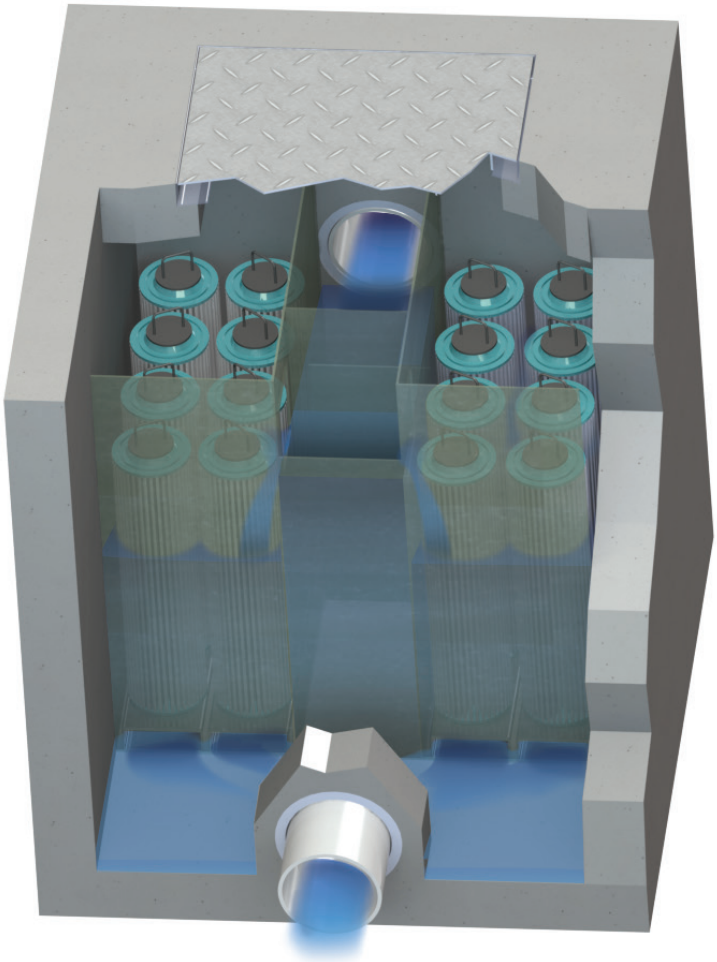
Documents to be placed in this field manual should include the following:

- As-built Drawings with Drainage Plans
- Operation and Maintenance Manual (provided by the manufacturer)

THE KRAKEN FILTER™

BIO CLEAN ENVIRONMENTAL SERVICES, INC.

OPERATION & MAINTENANCE



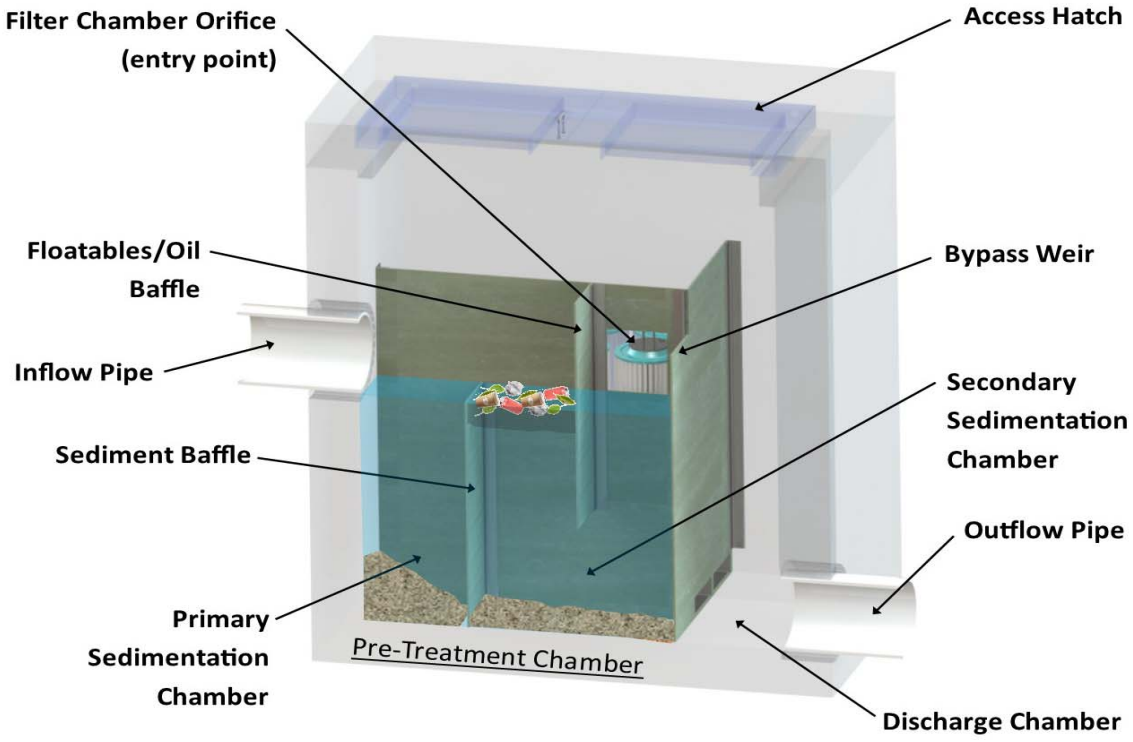
Bio Clean Environmental Services, Inc.
2972 San Luis Rey Road
Oceanside, CA 92054

www.BioCleanEnvironmental.com
P 760-433-7640
F 760-433-3176

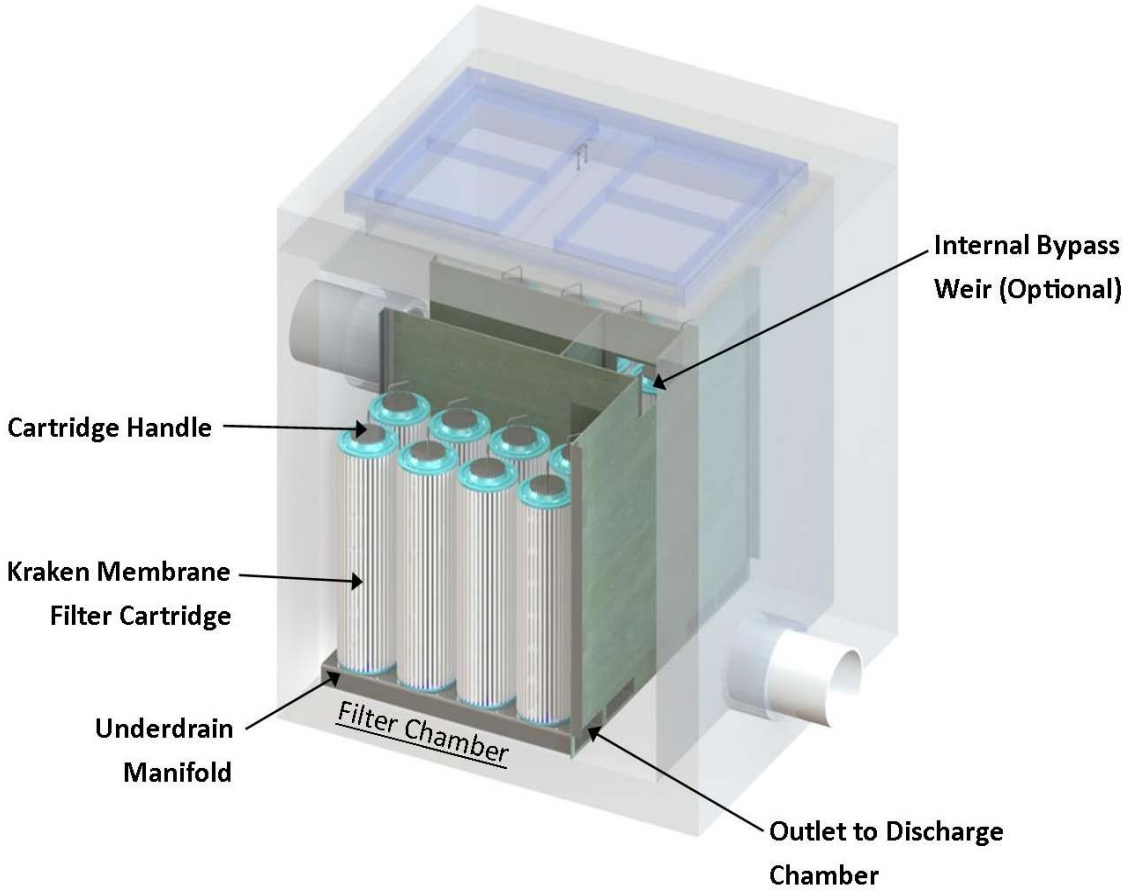
OPERATION & MAINTENANCE

The Kraken® Filter is designed at a minimal loading rate of only 0.05 gpm/sq ft of media surface to maximize longevity and minimize maintenance requirements. This is lower than any other system available. Passive backwash and pretreatment also help to minimize system maintenance requirements. The Kraken® Filter has proven to be able to handle up to at least 18 months sediment loading with no maintenance or loss of treatment capacity assuming 600 pounds of sediment per acre of impervious surface annually.

Yet, as with all stormwater BMPs inspection and maintenance on the Kraken® Filter is necessary. Stormwater regulations require that all BMPs be inspected and maintained to ensure they are operating as designed to allow for effective pollutant removal and provide protection to receiving water bodies. It is recommended that inspections be performed multiple times during the first year to assess the site specific loading conditions. This is recommended because pollutant loading and pollutant characteristics can vary greatly from site to site. Variables such as nearby soil erosion or construction sites, winter sanding on roads, amount of daily traffic and land use can increase pollutant loading on the system. The first year of inspections can be used to set inspection and maintenance intervals for subsequent years to ensure appropriate maintenance is provided. Without appropriate maintenance a BMP will exceed its storage capacity which can negatively affect its continued performance in removing and retaining captured pollutants.



Pre-Treatment Chamber Diagram:



Filter Chamber Diagram:

Inspection Equipment

Following is a list of equipment to allow for simple and effective inspection of the Kraken® Filter:

- Bio Clean Environmental Inspection Form.
- Flashlight.
- Manhole hook or appropriate tools to access hatches and covers.
- Appropriate traffic control signage and procedures.
- Measuring pole and/or tape measure.
- Protective clothing and eye protection.
- Note: entering a confined space requires appropriate safety and certification. It is generally not required for routine inspections of the system.

Inspection Steps

The core to any successful stormwater BMP maintenance program is routine inspections. The inspection steps required on the Kraken® Filter are quick and easy. As mentioned above the first year should be seen as the maintenance interval establishment phase. During the first year more frequent inspections should occur in order to gather loading data and maintenance requirements for that specific site. This information can be used to establish a base for long term inspection and maintenance interval requirements.

The Kraken® Filter can be inspected though visual observation without entry into the system. All necessary pre-inspection steps must be carried out before inspection occurs, especially traffic control and other safety measures to protect the inspector and near-by pedestrians from any dangers associated with an open access hatch or manhole. Once these access covers have been safely opened the inspection process can proceed:

- Prepare the inspection form by writing in the necessary information including project name, location, date & time, unit number and other info (see inspection form).
- Observe the inside of the system through the access hatches. If minimal light is available and vision into the unit is impaired utilize a flashlight to see inside the system and all of its chambers.
- Look for any out of the ordinary obstructions in the inflow pipe, pre-treatment chamber, filter chambers, discharge chamber or outflow pipe. Write down any observations on the inspection form.
- Through observation and/or digital photographs estimate the amount of floatable debris accumulated in the pre-treatment chamber. Record this information on the inspection form. Next utilizing a tape measure or measuring stick estimate the amount of sediment accumulated in the primary and secondary sedimentation chambers. Record this depth on the inspection form. Through visual observation inspect the condition of the filter cartridges. Look for excessive build-up of sediments on the surface and any build-up on the top of the cartridges. Record this information on the inspection form.
- Finalize inspection report for analysis by the maintenance manager to determine if maintenance is required.

Maintenance Indicators

Based upon observations made during inspection, maintenance of the system may be required based on the following indicators:

- Missing or damaged internal components or cartridges.
- Obstructions in the system or its inlet or outlet.

- Excessive accumulation of floatables in the pre-treatment chambers in which the length and width of the chamber behind oil/floatables skimmer is fully impacted.
- Excessive accumulation of sediment in the primary sedimentation chamber of more than 18” in depth.
- Excessive accumulation of sediment in the secondary sedimentation chamber of more than 6” in depth.
- Excessive accumulation of sediment in the filter chambers of more than 3” on average.
- Substantial build-up of sediments on the filter membrane of the filter cartridges which will have a very dark appearance indicating the membrane may be fully saturated with sediment.

Maintenance Equipment

While maintenance can be done fully by hand it is recommended that a vacuum truck be utilized to minimize time requirements required to maintain the Kraken® Filter:

- Bio Clean Environmental Maintenance Form.
- Flashlight.
- Manhole hook or appropriate tools to access hatches and covers.
- Appropriate traffic control signage and procedures.
- Measuring pole and/or tape measure.
- Protective clothing and eye protection.
- Note: entering a confined space requires appropriate safety and certification. It is generally not required for routine inspections of the system. Entry into the system will be required if it is determine the cartridge filters need washing/cleaning.
- Vacuum truck.
- Trash can.
- Pressure washer.

Maintenance Procedures

It is recommended that maintenance occurs at least three days after the most recent rain even to allow for drain down of the system and any upstream detention systems designed to drain down over an extended period of time. Maintaining the system while flows are still entering it will increase the time and complexity required for maintenance. Cleaning of the pre-treatment chamber can be performed from finish surface without entry into the vault utilizing a vacuum truck. Once all safety measures have been set up cleaning of the pre-treatment chamber can proceed as followed:

- Using an extension on a boom on the vacuum truck position the hose over the opened access hatch and lower into the center of the primary sedimentation chamber. Remove all floating debris, standing water and sediment from the chamber. A power washer can be used to assist if sediments have become hardened and stuck to the walls or the flow of the chamber. Repeat the same procedure for the secondary sedimentation chamber. This completes the maintenance procedure required on the pre-treatment chamber.

If maintenance is required on the filter cartridges the following procedure can be followed after maintenance on the pre-treatment chamber is performed:

- Following rules for confined space entry use a gas meter to detect the presence of any hazardous gases. If hazardous gases are present do not enter the vault. Following appropriate confined space procedures takes steps, such as utilizing venting system, to address the hazard. Once it is determined to be safe enter utilizing appropriate entry equipment such as a ladder and tripod with harness.
- Once entry into the system has been established the maintenance technician should position themselves to stand in the pre-treatment chamber. From here the removal of the cartridges can commence.
- Each cartridge is pressure fitted in place and includes a handle for easy removal. To remove a cartridge simply grab the handle and pull straight up. It may be required to gently shift pressure from side to side while pulling up to break the pressure seal. Removal of the cartridge should be done by hand with minimal effort and requires no tools.
- Once the cartridges are removed they should be lifted out from the vault and brought up to finish surface for cleaning. Using a large garbage can and a standard garden hose (low pressure nozzle) each cartridge should be rinsed off from the outside to remove accumulated sediments and debris. Once each cartridge is rinsed it should be placed to the side for re-installation.
- Each filter chamber should be power washed and vacuumed clean before re-inserting the cleaned cartridges.
- After all cartridges have been washed they can be replaced back into the vault. To replace each cartridge simply slide cartridge over each pressure fitted coupler. Push down on the handle to ensure the cartridge has been fully seated and the bottom of the cartridge is making contact with the floor.
- The last step is to close up and replace all access hatch lids and remove all traffic control.
- All removed debris and pollutants shall be disposed of following local and state requirements.

Maintenance Sequence

Remove Access Hatches Set Up Vacuum Truck to Clean The Pretreatment Chamber.

Insert Vacuum Hose in the Sedimentation Chamber and Vacuum Out All Trash, Sediment and Standing Water.

Assess the Condition of the Filter Cartridges and Determine If Cleaning is Required.

To Wash Cartridges Remove from Vault. Place Over Trash Can and Use a Garden Hose to Spray Clean.

Once Cleaned Install Back Into the Vault. This Completes Maintenance. Ensure Access Lids are Properly Replaced.

For Maintenance Services or Replacement Media Please Contact Us At:
760-433-7640
info@biocleanenvironmental.com

Inspection and Maintenance Report
Bio Clean Kraken Filter

Project Name _____

Project Address _____
(city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

Inspector Name _____ Date ____ / ____ / _____ Time _____ AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____ Additional Notes _____

For Office Use Only
(Reviewed By)
(Date)
Office personnel to complete section to the left.

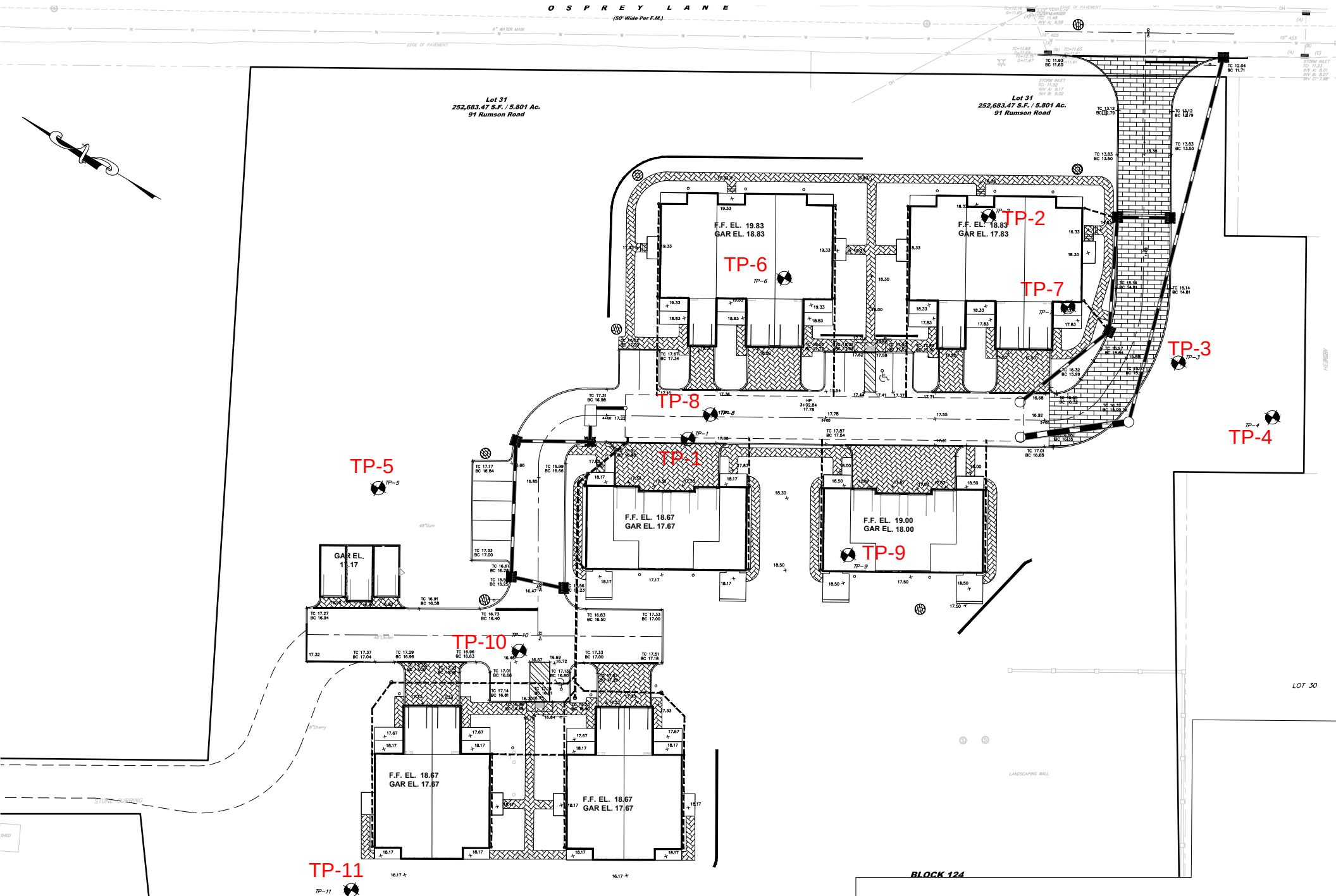
Site Map #	GPS Coordinates of Vault	Model #	Sediment Accumulation Sedimentation Chambers (lbs) & Filter Chambers (lbs)	Condition of Filter Cartridges & Were Filter Cartridges Cleaned	Structural Notes	Operational Per Manufactures' Specifications (If not, why?)
	Lat: Long:					
	Lat: Long:					
	Lat: Long:					

Comments:

2972 San Luis Rey Road, Oceanside, CA 92058 P. 760.433.7640 F. 760.433.3176

Attach Reference Documents Here

TEST PIT LOCATION MAP



FRENCH & PARRELLO ASSOCIATES, P.A.
1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

RUMSON ROAD TOWNHOUSE
MAJOR SITE PLAN
BLOCK 124, LOT 31
Borough of Rumson, Monmouth County NJ
(FPA NO. 15053.001)

SOIL LOG NO.: TP-1

SHEET NO.: 1 OF 11

DATE: 08/15/2019

GROUND ELEVATION: 15.00
WATER ELEVATION: 9.50
DEPTH OF WATER: **66”**
ESHWT DEPTH: 56”
ESHWT ELEVATION: 10.33

DEPTH	DESCRIPTION
0” - 14”	Topsoil
14” - 26”	Dark Yellowish Brown *(10YR4/6)* **Silt loam**; crumb, loose
26” - 39”	Yellowish Brown *(10YR5/6)* **Sandy clay loam**; crumb, loose
39” - 56”	Dark Yellowish Brown *(10YR3/6)* **Silty clay loam**; crumb, friable
56” - 70”	Dark Yellowish Brown *(10YR3/6)* **Sandy clay loam**; crumb, friable with common, medium, distinct light gray *(10YR 7/1)* mottles

END OF SOIL LOG

Notes:

Seepage at 66”

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, P.E. Date: / /____
N.J.P.E. License No. 45149

FRENCH & PARRELLO ASSOCIATES, P.A.

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Wall, New Jersey 07719

SOIL LOG

RUMSON ROAD TOWNHOUSE
MAJOR SITE PLAN
BLOCK 124, LOT 31
Borough of Rumson, Monmouth County NJ
(FPA NO. 15053.001)

SOIL LOG NO.: TP-2

SHEET NO.: 2 OF 11

DATE: 08/15/2019

GROUND ELEVATION: 13.00
WATER ELEVATION: 8.00
DEPTH OF WATER: **60”**
ESHWT DEPTH: 47”
ESHWT ELEVATION: 9.08

DEPTH	DESCRIPTION
0” - 7”	Topsoil
7” - 22”	Dark Yellowish Brown *(10YR4/4)* **Silt loam**; crumb, friable
22” - 47”	Yellowish Brown *(10YR5/6)* **Silty clay loam**; crumb, friable
47” - 50”	Dark Yellowish Brown *(10YR3/6)* **Sandy clay**; subangular blocky, friable with few, fine, faint grayish brown *(10YR5/2)* mottles
50” - 70”	Dark Yellowish Brown *(10YR3/6)* **Sandy loam**; subangular blocky, friable with common, medium, distinct gray *(10YR6/1)* mottles

END OF SOIL LOG

Notes:

Seepage at 60”

Signature of Soil Evaluator: _____ Date: ___/___/____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, P.E. Date: ___/___/____
N.J.P.E. License No. 45149

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SOIL LOG

RUMSON ROAD TOWNHOUSE
MAJOR SITE PLAN
BLOCK 124, LOT 31
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(FPA NO. 15053.001)

SOIL LOG NO.: TP-3

SHEET NO.: 3 OF 11

DATE: 08/15/2019

GROUND ELEVATION: 12.00
WATER ELEVATION: 7.17
DEPTH OF WATER: **58”**
ESHWT DEPTH: 43”
ESHWT ELEVATION: 8.42

DEPTH	DESCRIPTION
0” - 12”	Topsoil
12” - 43”	Yellowish Brown *(10YR 5/6)* **silty clay loam**, crumb, friable
43” – 58”	Dark Yellowish Brown *(10YR 4/6)* **sandy clay loam**, subangular blocky, friable with common, medium, distinct gray *(10YR 6/1*) mottles
58” – 72”	Dark Yellowish Brown *(10YR 3/6)* **sandy loam**, subangular blocky, friable with common, medium, distinct gray *(10YR 6/1*) mottles

END OF SOIL LOG

Notes:

Seepage at 58”

Signature of Soil Evaluator: _____ Date: ___/___/____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, P.E. Date: ___/___/____
N.J.P.E. License No. 45149

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SOIL LOG

RUMSON ROAD TOWNHOUSE
MAJOR SITE PLAN
BLOCK 124, LOT 31
Borough of Rumson, Monmouth County NJ
(FPA NO. 15053.001)

SOIL LOG NO.: TP-4

SHEET NO.: 4 OF 11

DATE: 9/10/2018

GROUND ELEVATION: 11.5
WATER ELEVATION: 7.33
DEPTH OF WATER: **50"**
ESHWT DEPTH: 36"
ESHWT ELEVATION: 8.50

DEPTH	DESCRIPTION
0" - 8"	Topsoil
8" - 36"	Yellowish Brown *(10YR 5/6)* **silty clay loam**, crumb, friable
36" – 68"	Dark Yellowish Brown *(10YR 4/6)* **sandy clay loam**, crumb, loose with common, medium distinct light brownish gray *(10YR 6/2)* mottles

END OF SOIL LOG

Notes:

Seepage at 50"

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, P.E. Date: / /____
N.J.P.E. License No. 45149

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SOIL LOG

RUMSON ROAD TOWNHOUSE
MAJOR SITE PLAN
BLOCK 124, LOT 31
Borough of Rumson, Monmouth County NJ
(FPA NO. 15053.001)

SOIL LOG NO.: TP-5

SHEET NO.: 5 OF 11

DATE: 9/10/2018

GROUND ELEVATION: 16.40
WATER ELEVATION: 11.65
DEPTH OF WATER: **57”**
ESHWT DEPTH: 57”
ESHWT ELEVATION: 11.65

DEPTH	DESCRIPTION
0” - 12”	Topsoil
12” - 27”	Dark Yellowish Brown *(10YR 4/6)* silt **loam**, crumb, loose
27” - 80”	Dark Yellowish Brown *(10YR 3/6)* **silty clay loam**, crumb, friable
80”- 96”	Dark Yellowish Brown *(10R 3/6)* **sandy clay loam**; crumb, friable with common, medium, distinct pale brown *(10YR 6/3)* mottles

END OF SOIL LOG

Notes:

Seepage at 57”

Signature of Soil Evaluator: _____ Date: ___/___/____
Mark Kalusz, EIT

Signature of Professional Engineer: _____ Date: ___/___/____
Brian R. Decina, P.E.
N.J.P.E. License No. 45149

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Wall, New Jersey 07719

SOIL LOG

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(FPA NO. 15053.001)

SOIL LOG NO.: TP-6

SHEET NO.: 6 OF 11

DATE: 01-14-2021

GROUND ELEVATION: 14.0
WATER ELEVATION: 9.7
DEPTH OF WATER: **52”**
ESHWT DEPTH: 50”
ESHWT ELEVATION: 9.8

DEPTH	DESCRIPTION
0” - 8”	Topsoil
8” - 22”	Yellowish Brown *(10YR 5/8)* **sandy clay loam**, subangular blocky, friable
22” - 50”	Dark Yellowish Brown *(10YR 3/6)* **sandy loam**, crumb, friable
50”- 70”	Light Brownish Gray *(10R 6/2)* **sandy loam**; crumb, friable with common, medium, distinct yellowish red *(5YR 4/6)* mottles
70”- 90”	Dark Yellowish Brown *(10YR 5/6)* **sandy loam**, crumb, friable

END OF SOIL LOG

Notes:

Seepage at 52”

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, P.E.
N.J.P.E. License No. 45149
Date: / /____

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(FPA NO. 15053.001)

SOIL LOG NO.: TP-7

SHEET NO.: 7 OF 11

DATE: 01-14-2021

GROUND ELEVATION: 13.0
WATER ELEVATION: 8.0
DEPTH OF WATER: **60”**
ESHWT DEPTH: 54”
ESHWT ELEVATION: 8.5

DEPTH	DESCRIPTION
0” - 9”	Topsoil
9” - 24”	Yellowish Brown *(10YR 5/8)* **sandy clay loam**, subangular blocky, friable
24” - 54”	Dark Yellowish Brown *(10YR 3/6)* **sandy loam**, crumb, friable
54”- 72”	Light Brownish Gray *(10R 6/2)* **sandy loam**; crumb, friable with common, medium, distinct yellowish red *(5YR 4/6)* mottles
72”- 96”	Dark Yellowish Brown *(10YR 5/6)* **sandy loam**, crumb, friable

END OF SOIL LOG

Notes:

Seepage at 60”

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, P.E. Date: / /____
N.J.P.E. License No. 45149

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SOIL LOG

RUMSON ROAD TOWNHOUSE
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(FPA NO. 15053.001)

SOIL LOG NO.: TP-8

SHEET NO.: 8 OF 11

DATE: 01-14-2021

GROUND ELEVATION: 14.8
WATER ELEVATION: 9.6
DEPTH OF WATER: **62”**
ESHWT DEPTH: 57”
ESHWT ELEVATION: 10.05

DEPTH	DESCRIPTION
0” - 8”	Topsoil
8” - 22”	Yellowish Brown *(10YR 5/8)* **sandy clay loam**, subangular blocky, friable
22” - 57”	Dark Yellowish Brown *(10YR 3/6)* **sandy loam**, crumb, friable
57”- 74”	Light Brownish Gray *(10R 6/2)* **sandy loam**; crumb, friable with common, medium, distinct yellowish red *(5YR 4/6)* mottles
74”- 92”	Dark Yellowish Brown *(10YR 5/6)* **sandy loam**, crumb, friable

END OF SOIL LOG

Notes:

Seepage at 62”

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, P.E.
N.J.P.E. License No. 45149
Date: / /____

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SOIL LOG

RUMSON ROAD TOWNHOUSE
MAJOR SITE PLAN
BLOCK 124, LOT 31
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(FPA NO. 15053.001)

SOIL LOG NO.: TP-9

SHEET NO.: 9 OF 11

DATE: 01-14-2021

GROUND ELEVATION: 14.0
WATER ELEVATION: 9.2
DEPTH OF WATER: **58”**
ESHWT DEPTH: 55”
ESHWT ELEVATION: 9.4

DEPTH	DESCRIPTION
0” - 4”	Topsoil
4” - 25”	Yellowish Brown *(10YR 5/8)* **sandy clay loam**, subangular blocky, friable
25” - 55”	Dark Yellowish Brown *(10YR 3/6)* **sandy loam**, crumb, friable
55”- 77”	Light Brownish Gray *(10R 6/2)* **sandy loam**; crumb, friable with common, medium, distinct yellowish red *(5YR 4/6)* mottles
77”- 92”	Dark Yellowish Brown *(10YR 5/6)* **sandy loam**, crumb, friable

END OF SOIL LOG

Notes:

Seepage at 58”

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, P.E. Date: / /____
N.J.P.E. License No. 45149

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SOIL LOG

RUMSON ROAD TOWNHOUSE
MAJOR SITE PLAN
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Borough of Rumson, Monmouth County NJ
(FPA NO. 15053.001)

SOIL LOG NO.: TP-10

SHEET NO.: 10 OF 11

DATE: 01-14-2021

GROUND ELEVATION: 16.2
WATER ELEVATION: 10.0
DEPTH OF WATER: **74”**
ESHWT DEPTH: 67”
ESHWT ELEVATION: 10.6

DEPTH	DESCRIPTION
0” - 8”	Topsoil
8” - 32”	Yellowish Brown *(10YR 5/8)* **sandy clay loam**, subangular blocky, friable
32” - 67”	Dark Yellowish Brown *(10YR 3/6)* **sandy loam**, crumb, friable
67”- 88”	Light Brownish Gray *(10R 6/2)* **sandy loam**; crumb, friable with common, medium, distinct yellowish red *(5YR 4/6)* mottles
88”- 103”	Dark Yellowish Brown *(10YR 5/6)* **sandy loam**, crumb, friable

END OF SOIL LOG

Notes:

Seepage at 74”

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

Signature of Professional Engineer: _____ Date: / /____
Brian R. Decina, P.E.
N.J.P.E. License No. 45149

FRENCH & PARRELLO ASSOCIATES, P.A.
1800 State Highway 34, Suite 101
Wall, New Jersey 07719

SOIL LOG

RUMSON ROAD TOWNHOUSE
MAJOR SITE PLAN
BLOCK 124, LOT 31
Borough of Rumson, Monmouth County NJ
(FPA NO. 15053.001)

SOIL LOG NO.: TP-11

SHEET NO.: 11 OF 11

DATE: 01-14-2021

GROUND ELEVATION: 14.8
WATER ELEVATION: 10.2
DEPTH OF WATER: **55”**
ESHWT DEPTH: 40”
ESHWT ELEVATION: 11.5

DEPTH	DESCRIPTION
0” - 10”	Topsoil
10” - 21”	Yellowish Brown *(10YR 5/8)* **sandy clay loam**, subangular blocky, friable
21” - 40”	Dark Yellowish Brown *(10YR 3/6)* **sandy loam**, crumb, friable
40”- 70”	Light Brownish Gray *(10R 6/2)* **sandy loam**; crumb, friable with common, medium, distinct yellowish red *(5YR 4/6)* mottles
70”- 92”	Dark Yellowish Brown *(10YR 5/6)* **sandy loam**, crumb, friable

END OF SOIL LOG

Notes:

Seepage at 55”

Signature of Soil Evaluator: _____ Date: / /____
Mark Kalusz, EIT

Signature of Professional Engineer: _____
Brian R. Decina, P.E. Date: / /____
N.J.P.E. License No. 45149

Inspection Checklist / Maintenance Actions
MTD

Checklist (circle one)**:** Quarterly / Annual / Monthly / Special Event Inspection

Checklist No. _____ Inspection Date: _____

Date of most recent rain event: _____

Rain Condition (circle one):
Drizzle / Shower / Downpour / Other _____

Ground Condition (circle one):
Dry / Moist / Ponding / Submerged / Snow accumulation

The following inspection items and preventative/corrective maintenance actions listed below represent general requirements. The design engineer and/or responsible party shall adjust the items and actions to better meet the conditions of the site, the specific design targets, and the requirements of regulatory authorities.

	For Inspector			For Maintenance Crew
Component No. Component Name	**Inspection Item and Inspection Item No.**		**Result**	**Preventative / Corrective Maintenance Actions**
A	1		Y__ N__	
	2		Y__ N__	
	3		Y__ N__	
	4		Y__ N__	
	5		Y__ N__	
B	1		Y__ N__	
	2		Y__ N__	
	3		Y__ N__	
	4		Y__ N__	
	5		Y__ N__	
Note:				

Follow Up Items: (Component No. / Inspection Item No.):
_(e.g., B/1, C/2)_____

Associated Work Orders: # _____, # _____, # _____, # _____, # _____

_____ _____ _____

Inspector Name **Signature** **Date**

Report issues to the local authority and mosquito commission as required by local ordinances and regulatory authorities.

File this checklist in the Maintenance Log after performing maintenance.

Preventative Maintenance Record

Corresponding Checklist No. _____
Component No._____, Inspection Item No._____

Work Logs

Activities	Components	Date Completed
Required activities depend on the MTD		

Debris, sediment, and trash are handled (onsite / by _____ (contractor name) to disposal site _____). (See Part I: Maintenance Plan – Disposal Plan Section)

Crew member:_____/_____ **Date:** _____
(name/ signature)

Supervisor:_____/_____ **Date:** _____
(name/ signature)

File this Preventative Maintenance Record in the Maintenance Log after performing maintenance.

Corrective Maintenance Record

1. **Work Order # _____ Date Issued _____**

2. **Issue to be resolved**:

3. The issue was from **Corresponding Checklist No. _____, Component No._____, Inspection Item No.__** (e.g., 2, 3)**_____.**

4. **Required Actions**

Actions	Planned Date	Date Completed

5. **Responsible person(s):**
   _____

6. **Special requirements**
   - Time of the season or weather condition:_____
   - Tools/equipment:_____
   - Subcontractor (name or specific type):_____

Approved by _____/_____ Date _____
(name/signature)

Verification of completion by _____/_____ Date _____
(name/signature)

File this Corrective Maintenance Record in the Maintenance Log after performing maintenance.

Maintenance Logs and Inspection Records

As per N.J.A.C. 7:8-5.8(e), preventative and corrective maintenance shall be performed to maintain the function of the stormwater management measure(s), including repairs or replacement to the structure; removal of sediment, debris, or trash; restoration of eroded areas; snow and ice removal; fence repair or replacement; restoration of vegetation; and repair or replacement of non-vegetated linings.

As per N.J.A.C. 7:8-5.8(f), the person responsible for maintenance shall maintain a detailed log of all preventative and corrective maintenance for the structural stormwater management measures incorporated into the design of the development, including a record of all inspections and copies of all maintenance-related work orders.

The responsible party shall maintain a record of all maintenance actions performed, including:

- Inspection checklists from each performed inspection
- Preventative maintenance logs
- Corrective maintenance logs, including work orders
- Other maintenance records

Maintenance Logs and Inspection Records

As per N.J.A.C. 7:8-5.8(e), preventative and corrective maintenance shall be performed to maintain the function of the stormwater management measure(s), including repairs or replacement to the structure; removal of sediment, debris, or trash; restoration of eroded areas; snow and ice removal; fence repair or replacement; restoration of vegetation; and repair or replacement of non-vegetated linings.

As per N.J.A.C. 7:8-5.8(f), the person responsible for maintenance shall maintain a detailed log of all preventative and corrective maintenance for the structural stormwater management measures incorporated into the design of the development, including a record of all inspections and copies of all maintenance-related work orders.

The responsible party shall maintain a record of all maintenance actions performed, including:

- Inspection checklists from each performed inspection
- Preventative maintenance logs
- Corrective maintenance logs, including work orders
- Other maintenance records

Inspection Checklist / Maintenance Actions
Basin #1

Checklist (circle one)**:** Quarterly / Annual / Monthly / Special Event Inspection

Checklist No. _____ **Inspection Date: _____**

Date of most recent rain event: _____

Rain Condition (circle one):
Drizzle / Shower / Downpour / Other _____

Ground Condition (circle one):
Dry / Moist / Ponding / Submerged / Snow accumulation

	For Inspector			For Maintenance Crew
Component No. Component Name	**Inspection Item and Inspection Item No.**		**Result**	**Preventative / Corrective Maintenance Actions**
A Basin Through Inspection ports	1	Standing water is present after the design drain time The observed drain time is approximately _____ hours.	Y__ N__	Recheck to determine if there is standing water after 72 hours If standing water is present longer than 5 days, report to mosquito commission. Remove any sediment buildup with vacuum truck. Work Order # _____
	2	Excessive sediment, silt, or trash accumulation within distribution pipes	Y__ N__	Clean pretreatment system Remove silt, sediment, and trash Work Order # _____
Note:				

Follow Up Items (Component No. / Inspection Item No.):

_____

Associated Work Orders: # _____, # _____, # _____, # _____, # _____

_____ _____ _____

Inspector Name **Signature** **Date**

Report issues to the local authority and mosquito commission as required by local ordinances and regulatory authorities, if standing water is present longer than 5 days.

File this checklist in the Maintenance Log after performing maintenance.

Preventative Maintenance Record

Corresponding Checklist No. _____
Component No._____, Inspection Item No._____

Work Logs

Activities	Components	Date Completed
Sediment/debris removal **Sediment removal should take place when the basin is thoroughly dry**		
Other		

Debris, sediment, and trash are handled by _____ to disposal site _____.
(See Part I: Maintenance Plan – Disposal Plan Section)

Crew member:_____/_____ **Date**: _____
(name/ signature)

Supervisor:_____/_____ **Date**: _____
(name/ signature)

File this Preventative Maintenance Record in the Maintenance Log after performing maintenance.

Corrective Maintenance Record

1. **Work Order # _____ Date Issued _____**

2. **Issue to be resolved**:

3. The issue was from **Corresponding Checklist No. _____, Component No. _____ _____, Inspection Item No._____.**

4. **Required Actions**

Actions	Planned Date	Date Completed

5. **Responsible person(s):**
   _____

6. **Special requirements**
   - Time of the season or weather condition:_____
   - Tools/equipment:_____
   - Subcontractor (name or specific type):_____

Approved by _____/_____ Date _____
(name/signature)

Verification of completion by _____/_____ Date _____
(name/signature)

File this Corrective Maintenance Record in the Maintenance Log after performing maintenance.